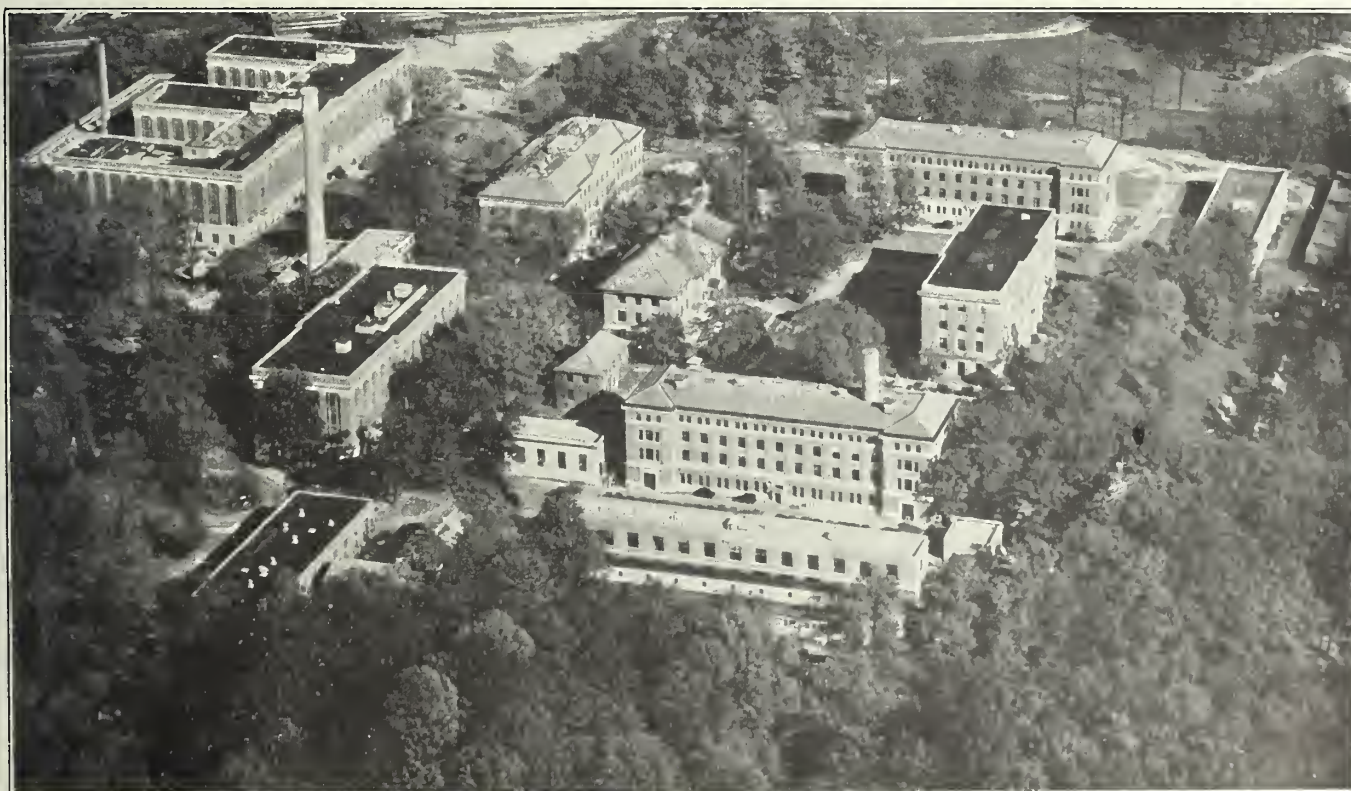


COMMERCIAL STANDARDS MONTHLY



*A Review of Progress in
Commercial Standardization and Simplification*



AIRPLANE VIEW OF NATIONAL BUREAU OF STANDARDS

ISSUED BY THE NATIONAL BUREAU OF STANDARDS OF THE
UNITED STATES DEPARTMENT OF COMMERCE, WASHINGTON, D.C., U.S.A.

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The Commercial Standardization Group

DIVISION OF SIMPLIFIED PRACTICE

Edwin W. Ely

The division of simplified practice cooperates with industrial and commercial groups to reduce waste, usually through eliminating unnecessary variety of product, method, or practice. Its function is to bring together all parties interested in a project of this character, and to coordinate their work in developing a simplified practice recommendation. Such work includes surveys of current practice, formulation of a simplified practice program, and presentation of that program for action by a general conference representing all interests. The division then transmits to all concerned a full report of the general conference, with a request for written acceptance of the action taken. When the volume of acceptances is sufficient to indicate initial success, the Department of Commerce indorses the program and publishes the recommendation. The division thereafter cooperates with a standing committee appointed by the industry concerned, in conducting periodic surveys to determine the degree of adherence, to maintain and extend support of the recommendation, and to secure data for reaffirmation or revision. Simplified practice may be applied to any commodity or activity in which it will reduce waste. The division stands ready to render service in developing and making effective any application of simplified practice which will reduce waste, stabilize business, or extend commerce.

BUILDING AND HOUSING DIVISION

J. S. Taylor

The division of building and housing, formed in 1921, cooperates with business, technical, and professional groups in furthering construction activities. It works to modernize building codes and to encourage improved standards for the quality of building construction, and the practical application of the latest development in design and use of building materials.

It encourages home ownership through the development of an enlarged, steadier, more intelligent, and more discriminating demand for dwellings—the largest single class of buildings which the construction industries provide.

The division also cooperates with other governmental agencies and with many private business and professional groups in efforts to distribute building activity more evenly throughout the year and to secure less fluctuation from year to year.

The work on city planning and zoning has the broad objective of making buildings more useful through proper location with respect to other structures, stabilizing of land values and property uses, well coordinated thoroughfare systems, and well laid out public works.

DIVISION OF SPECIFICATIONS

A. S. McAllister

The duties of the division of specifications are to promote and facilitate the use and unification of specifications. In doing so it carries on activities involving cooperation with technical societies; trade associations; Federal, State, and municipal Government specifications making and using agencies; producers, distributors, and consumers; and testing and research laboratories. It ascertains the Standardization and specifications promoting activities of the associations and societies, and brings to their attention the work being done by the commercial standardization group. It brings the Federal specifications and commercial standards to the attention of the maximum number of producers and users of commodities complying with these standards and specifications. It compiles and distributes lists of sources of supply of materials guaranteed to comply with the standards and specifications. It shows both buyers and sellers the benefits from handling nationally specified, certified, and labeled commodities. The division prepares directories of governmental and nongovernmental testing laboratories and the Directory of Specifications, and is working on an encyclopedia of specifications, the first two volumes of which have been issued, namely, "Standards and Specifications in the Wood-Using Industries" and "Standards and Specifications for Non-metallic Minerals and their Products." It also aids in preparing the Standards Yearbook.

STANDARDIZATION
...IS..
A CONTINUING PROCESS
~*~
ITS AIM IS NOT FIXITY
OR STAGNATION
..BUT..
TO ADD SERVICEABILITY
AS OFTEN AS THE
POTENTIAL GAIN
MAKES IT WORTH WHILE

DIVISION OF TRADE STANDARDS

[I. J. Fairchild]

The division of trade standards, on request, assists industrial and commercial groups in the voluntary establishment of standards covering grades, quality, dimensional interchangeability, or other acceptance criteria as a national basis for marketing manufactured commodities.

The detail criteria are selected or determined voluntarily by interested buyers or sellers, without any Government dictation or domination, and adjusted at a general conference of producers, distributors, and users so as to represent the composite views of all branches. The division functions chiefly as a neutral agency to see that all interested elements are given full opportunity to be heard and satisfied; to solicit and record acceptances; and to publish and promulgate the standard when a satisfactory majority of acceptances is obtained and provided there is no active opposition.

Industries are encouraged to apply self-certifying labels to products meeting the commercial standard requirements, as a means of protecting the consumer and the scrupulous seller from misrepresentation or unfair methods of marketing.

Provision is made for regular revision of the standard through the appointment of a standing committee to consider periodically any necessity for revision of the standard, in order that it may be kept constantly compatible with progress in the industry.

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AN INVITATION TO VISIT THE NATIONAL BUREAU OF STANDARDS

A cordial invitation is extended to all interested in scientific progress to visit the laboratories of the National Bureau of Standards when in Washington. A personally conducted trip is organized at 2.15 p. m. daily except on holidays. Special trips for groups may be arranged at other times by writing to the bureau in advance. The bureau's illustrated Visitor's Manual may be had for the asking. This lists the work in progress and gives an airplane view of the ensemble and a brief statement of typical discoveries and inventions which have been notable, basic contributions to radio, aviation, and other modern arts and industries.

10,000 ACCEPTORS TO SIMPLIFIED PRACTICE

*1931 Fiscal Year Shows Marked Increase
in Promulgation of Programs*

TWENTY new simplified-practice recommendations were developed by industry during the fiscal year ending June 30, 1931. These additions raised the total number of recommendations to 117, exclusive of one regional recommendation and one limitation of variety recommendation. Other programs are in course of acceptance.

Ten thousand different associations and firms are now listed as acceptors of these 117 recommendations, several having accepted two or more programs. The total number of acceptances recorded for the recommendations is approximately 30,000.

The most remarkable thing about this steady rise in number during the past 10 years is the increasing interest in simplified practice as shown by consumers of the commodities simplified. This interest is maintained not only in the existing recommendations, but also extends to the establishment of new simplification programs. For example, one simplified-practice recommendation that was originated during the past year by consumers, and which is now before industry for acceptance, is the packaging of certain items of overhead electric railway material. Similarly, two other projects were proposed by representative users and are now being developed. This interest, on the part of the consumer, is not confined to individuals. Such national associations as those composed of purchasing agents, storekeepers, building and construction contractors, architects, department stores, groceries, and druggists, are constantly increasing their efforts to eliminate waste through the application of simplified practice.

During the same fiscal year 15 simplified-practice recommendations were issued as printed pamphlets. The total number of printed recommendations to date is 115.

A total of 37 existing recommendations were reviewed by their respective standing committees during the same 12-month period. Of these, 31 were reaffirmed without change for additional periods, and 6 were revised.

Surveys of production, distribution and use, were made of adherence to 13 simplified-practice recommendations. The acceptors reporting indicated that, on the average, approximately 90 per cent of their volume of production conformed with the recommendations. Similar surveys made during the previous year revealed that the percentages of adherence for 25 commodities averaged 87 per cent.

Responsible agencies in the various industries affected have reported to the National Bureau of Standards that savings due to the adherence to the entire program of 117 simplified-practice recommendations, total more than \$250,000,000 a year. Individual firms have reported that they are saving thousands of dollars annually.

FEDERAL STANDARDS FOR FARM PRODUCTS

Federal Standards and Certification Have Greatly Facilitated Future Trading in Agricultural Commodities

By NILS A. OLSEN ¹

The standardization of farm products by the United States Department of Agriculture roots deeply in the needs of our agriculture. The work has developed logically from the desire of producers, dealers, and consumers for a uniform and universal yardstick with which to measure variations in the quality of farm products as a basis for trading. Local standards or brands set up by individuals, associations, chambers of commerce, and States had served in a limited way, but they could not prevent confusion and misunderstandings, since these local standards varied from region to region and almost from market to market. Increasing distance between producer and consumer brought about by the specialization of agriculture in areas far removed from markets intensified the problem.

Need for measures of quality as a basis for market quotations and information also favored the development of Federal standards. Without standards it was impossible to make adequate price comparisons between markets or between periods. When Congress made an appropriation in 1916 especially for a market information service, the formulation of standards became imperative.

The financing necessities of agriculture provided further reasons for Federal activity in standardization. The passage of the Federal warehouse act, largely brought about by the condition of the cotton market in 1914, was designed primarily to provide warehouse receipts carrying information that would enable bankers at a distance to appraise the market value of cotton covered by such receipts and convince bankers that there was responsibility back of the warehousemen who issued the receipts.

Other conditions developed by the World War hastened the Federal work in standardization of farm products. The cotton futures act passed in 1914 required the use of Federal standards in future trading in cotton; the grain standards act of 1916 required the use of Federal standards in interstate commerce when grain was sold on grade; the food products act of 1917 provided authority for the establishment of permissive or optional standards and an inspection on fruits, vegetables, and other products. These acts, together with the cotton standards act of 1923, requiring the use of Federal standards in all cotton transactions based on grade, and the inclusion annually of authority in the appropriation acts of the department, have given the standardization and the resulting inspection service of the department a permanent legislative status.

Standards for farm products are a result of evolution and have been shaped by conditions both within and without the industry. Inevitably they reflect variations in agricultural commodities themselves. As contrasted with most products of industry, farm products present a wide range in qualities, because of varietal, environmental, and seasonal influences. In

our efforts to eliminate undesirable varieties in agriculture we have something perhaps akin to the "simplified commercial practice" of industry, but the process of eliminating undesirable varieties and undesirable qualities of the products of agriculture is a slow one at best; therefore standards must be developed for agricultural products as they come from the soil in all their variation. Emphasis on quality factors necessarily varies with the commodity. For example, since foreign material is more readily removed from beans than from wheat, it is given a different emphasis in the standards for beans than in the standards for wheat.

Farm commodities change with production practices. A class of wheat as grown to-day contains less admixture of other wheats than was true some years ago. This makes it desirable to reduce the admixture of other wheats previously allowed under the standards.

On the other hand, the demand for agricultural products is not uniform. Preferences and requirements of consumers often vary materially from market to market as well as from period to period in regard to any given commodity. The Boston market pays a substantial premium for green asparagus, whereas Springfield consumers, 100 miles or so away, disclose no like preference for color in asparagus. The standards can not accommodate themselves to all gradations in consumer requirements, but they seek to cover as far as practicable the major variations in market demand.

Changes in industrial technique or in methods of marketing may greatly alter the importance of quality factors or quality standards. Hard wheat previously sold at a discount, but, as a result of revolutionary developments in methods of milling, it now sells at a premium. Progress in research and standardization technique has an important influence. The improved colorimeter, for example, permits the definitions and measurement of the color factor with an accuracy never before possible. Progress in the field of price analysis is now making it possible to measure quantitatively the market importance of certain quality factors.

Certain broad principles are recognized as fundamental in the development of Federal standards. Such standards cover significant gradations in quality; therefore the standards established for trading in agricultural commodities are not the minimum standards of the food and drug legislation and are not directly comparable with the commercial standards of industry. Instead, they cover all segments of the supply and afford a basis for trading in all qualities of the products.

The standards reflect, to a large degree, the normal spreads in the market value of a commodity. It is contemplated that steps between grades, on the average, will correlate fairly closely with the price differentials that obtain in the market, but until recently there has been no adequate measure of the

¹ Chief, Bureau of Agricultural Economics, U. S. Department of Agriculture.

price significance of separate quality factors; in fact, some quality factors that affect prices may not yield to statistical measurements. Observation and judgment, therefore, must be employed in measuring the market significance of quality factors while more adequate measurements are being devised.

On the other hand, we can not expect the relationship between the grades and market price differentials to remain constant. Apart from the influence of variations in the supply upon price differentials, it is apparent that these differentials are not always based upon differences in the intrinsic or objective value of the product. Premiums and discounts may reflect buyers' opinions as to value which do not always correspond to intrinsic value. Prior to the adoption of Federal standards, for instance, "pea-green color" was the factor of quality in alfalfa hay that commanded a premium, but as studies have disclosed that the feed value of alfalfa hay correlates more closely with its leafiness, the factor of leafiness is given greater emphasis than color in the standards. The influence of the standards and the educational work accompanying their introduction is apparently reflected in the steadily increasing premiums paid for "leafy" as compared with "pea-green" alfalfa.

Thus for some commodities standards are formulated that express the relative food, feed, processing, or manufacturing utility of the product. Such standards assist in bringing about a better adjustment between market prices and variations in quality.

Stability from year to year is a further requirement. The standards are not shifted from season to season, depending upon the quality of the crop, and they are uniform within reasonable limits throughout the country. They cover characteristics common to products grown in all major regions and do not reflect the characteristics that are peculiar to products in only limited areas, except where differences in quality of a product are so marked as to differentiate them as separate classes of the product. Yet the standards are flexible enough to allow for occasional adjustment to significant long-time changes in the character of the product, in market requirements, and in technique.

In the standardization work effort is made to keep the standards thoroughly practicable in the buying and selling of farm products. Established trade practices are reflected in the grades as far as possible, and the cooperation of the trade is enlisted to secure the adoption of the standards by the industry. The experience of the trade with private standards has played no small part in the development of the Federal standards.

The factors selected to represent quality and the emphasis placed upon quality factors vary with the commodity. Grain is graded on numerous factors of quality, among which test weight, moisture content, foreign material, damage, and the various factors of condition, such as coolness, heating, sweetness, and sourness, are of fundamental importance. The wool standards, on the other hand, are at present based on only one factor, the diameter of the fiber. Color is more important as a factor in the market value of hay than of wheat, and color is regarded as a more important index of quality in timothy than in alfalfa hay.

The points at which the upper and lower limits of grades are placed likewise differ with commodities. The limits of a grade must be wide enough apart to avoid technicalities that impair their practical use, but if the limits are not reasonably narrow, significant dif-

ferences in quality between commodities near the bottom and those near the top limits of the grade will result.

Quantitative measurement of quality factors in agricultural commodities presents unusual difficulties, and researches to date have not developed mechanical or chemical tests with which to measure all of them, but increased definiteness in the specifications of the standards and in certification according to them is gradually being attained. Ten years ago only a few mechanical and chemical tests were used successfully by the department in measuring quality factors, and they were used in the case of only three or four commodities; today such tests are constantly increasing in number and efficiency and are applied to many products.

A few examples will suffice. Three of the factors of quality in grain—moisture content, test weight, and cleanliness—are determined by chemical and mechanical tests. A new device for determining the moisture contents, based on the principle of measuring the resistance to an electric current as it passes through a body of grain, is in process of development and promises to replace the old method commercially. The new method requires only 30 seconds for a determination as compared with 40 minutes under the old method. Both Federal and State departments of agriculture are employing technical tests in measuring certain quality factors in fruits; the saccharimeter is used in ascertaining the sugar content of grapes, the sugar acid test for maturity of citrus fruits, and the specific gravity test for maturity of cantaloupes. In the examination and grading of canned fruits and vegetables a pressure gauge is used to ascertain the "vacuum condition" of the can, the density of sirups is tested with hydrometers, brine solutions are tested with salinometers, and penetrometers are used in determining the consistency of such products as canned pumpkin. An improved cotton-fiber sorting machine measures fiber lengths with a high degree of accuracy and with the bundle fiber test the strength of cotton fibers can be ascertained. Additional tests are constantly in process of development. Studies of the palatability of meat, for instance, are expected to help establish the relationship between external evidences of quality and the quality of the product itself.

The tendency throughout is to substitute accurate technical tests for human judgment. It will be difficult to devise technical tests for the quantitative measurement of such factors as flavor and odor; moreover, the tests must be of a simple and practical nature if they are to serve in the commercial certifying of commodities. But though the difficulties to overcome are many, the possibilities in this field are well nigh limitless, and encouraging progress is being made.

The best test of the practicability of the standards is the use to which they are put. The Federal standards have not as yet completely established themselves in all parts of our agriculture; because of their very nature it can not reasonably be expected that they will meet all requirements of producers, consumers, and dealers. But during the 15 years of this work there has been wide adoption of these standards for use in this country and in many foreign lands.

Some of the Federal standards are mandatory, their use being required in interstate transactions based on grade, as in the case of cotton and grain; and Federal standards must be used on Federal warehouse receipts except where depositors request that grade certifica-

tion be omitted. All other Federal standards are of a permissive character and their use is wholly voluntary, except that certain States have made the use of certain Federal standards obligatory under specified conditions.

Since 1914, standards for practically every agricultural commodity have been issued. Within each commodity may be several classes or types for which separate sets of standards have been provided. In many cases these standards have been adopted as official standards by States, exchanges, and associations. Under a special agreement, reached in 1923, with the European Cotton Exchanges, the grade standards for cotton were issued as universal standards. The standards for grain and other commodities are also receiving recognition in many foreign countries.

Concrete evidence of the usefulness of the Federal standards is found in the records of the inspection service. Certification under the standards is made in large part by inspectors licensed by the Department of Agriculture. Unfortunately, a common basis for comparing certification of the various commodities is not available. The certification of grain and cotton according to Federal standards is mandatory when the commodity is sold according to grade; for other commodities certification is wholly voluntary. A total of 1,353,800 carloads of grain were inspected in 1918-19; 10 years later (1928-29) these inspections had mounted to 1,916,940, an increase of 42 per cent. Similar data covering inspections by licensees are not available for cotton, but the increased distribution of type samples and the growing number of licensed cotton classes are indicative of the growing use of Federal standards in the merchandising of cotton.

The record of inspections under the permissive standards shows substantial progress with regard to all commodities in volume of product inspected, although in the majority of cases the inspections account for only a small percentage of the commercial supply, ranging from less than 1 per cent in meats to as high as 80 per cent in the case of potatoes. For a group of products as a whole, the use of the permissive standards is probably most marked in fruits and vegetables. During the current year the quantity inspected amounted to more than 288,000 carloads, representing more than 25 per cent of the car-lot movement for the entire country. The use of standards by the fruit and vegetable industry has expanded markedly at shipping points; 94 per cent of the certificates issued during the current year were based on Federal grades, and 85 per cent of all inspections were made at shipping point. This growing use of inspections at shipping points forcefully illustrates the value that shippers attach to the service. The inspections are made for a fee and the shipping point inspection is practically self-supporting; evidently this service is selling itself.

Demand for standardization and certification of farm products recently has come from some new directions. Cannerymen expressed a wish to purchase vegetables from producers on the basis of grades, and canning-tomato grades were accordingly issued in 1926. This year 57 canners, located in 10 States, indicated their intention of contracting with their growers for the 1930 crop on the basis of Federal grades.

Standards for canned fruits and vegetables are fast becoming an important factor in the financing of the canning industry. Recently the demand has broad-

ened to cover their use in the buying and selling of canned foods. Under present legislation, however, the use of Federal standards for canned fruits and vegetables is limited to products stored in federally licensed warehouses. The growing demand for this service on canned products for merchandising purposes is illustrated by the stipulation of a large chain grocery company that all canned tomatoes purchased for its account have to be shipped to federally licensed warehouses, the avowed purpose being to have the goods inspected on the basis of Federal standards.

In the short span of a decade and a half, Federal standardization and certification of farm products have become integral parts of our agricultural structure. It now remains to perfect this service. The country at last has a common language in which to express gradations in the quality of farm products. Federal standards provided this language. This was a fundamental step in agricultural marketing. The standards supplied an indispensable basis for price quotations the country over, and made possible a comprehensive nation-wide market information service.

Federal standards and market news have brought widely separated buyers and sellers closer together. They have helped the farmer to obtain the price to which the quality of his products and the condition of the market entitle him; we are gradually working away from the flat, average price paid to the producer for his product, irrespective of its quality. This double service has helped to make the farmers' market world-wide. The area over which demand can operate quickly and sensitively has been vastly broadened. Distant buyers can purchase on the basis of grade and be reassured, within narrow limits, as to the characteristics of the product they buy. Under such conditions every product, according to its quality, is helped to find its most advantageous market.

The guarantees of quality afforded by an impartial national service of standards and certification reduce the merchandising risk incident to undersirable or fraudulent deliveries on contracts. Federal standards and certification have greatly facilitated future trading in agricultural commodities. In future trading the buyer can not choose the particular seller with whom he will trade; his protection, therefore, must be in the accurate certification of the product under standards that adequately describe it.

It is the general observation of those associated with the inspection service that Federal standards and certification have facilitated a meeting of minds between buyer and seller and placed the ethics of the market place on a higher level. Where the service is regularly used, deception and fraud by either buyer or seller are more difficult. In the administration of the perishable agricultural commodities act, passed in the recent session of Congress, which requires the licensing of car-lot dealers in fresh fruits and vegetables and the supervision of certain transactions in that trade, the standardization and inspection service of the department will be of inestimable value.

The reflection to producers of price differentials according to quality is registering a gradual influence upon agricultural production. Farmers are sensitive to the price incentive—the shifts that have taken place in the production of fruit and vegetable varieties, for instance, illustrate the response of farmers to price differentials and the desire to produce what the public wants to buy.

To carry this work through to the buying housekeeper is now a great need. We have made a promising beginning in the way of stamping the grade of cuts of beef, attaching a statement of grade on holiday turkeys, using certificates of quality in the butter cartons

and related work, but we must go much further. Until the individual consumer thinks in terms of qualities and buys on the basis of grades that signify quality, there can not be the most sensitive adjustment of price to quality.

DEVELOPMENTS IN ZONING LEGISLATION

Smaller Communities Adoption of Zoning Laws Outstanding in 1930

The control of municipal growth of smaller communities by zoning is one of the recent striking developments in the zoning field, according to a survey of zoning laws and ordinances for 1930 just completed by the division of building and housing of the National Bureau of Standards. Of 77 municipalities adopting zoning ordinances for the first time last year, 70 had population not in excess of 40,000, whereas in the early days of zoning it was the larger cities, for the most part, that took it up.

The ordinances adopted last year brought the number of communities having them nearly up to the 1,000 mark, representing more than 46,000,000 persons, which is equal to more than 67 per cent of the urban population of the United States.

Zoning, it is pointed out in the report, is designed to regulate the kind and density of uses of private land, and the use, height, and bulk of private buildings in the interest of the community as a whole, in order that its inhabitants may enjoy the greater degree of health and safety and the economic benefits that attend a more open, orderly, and stable development.

It is not claimed for zoning that all future needs of a community may be foreseen and provided for. Maps are not fixed nor ordinances immutable. Zoning cuts off premature and sporadic exploitation of districts by their utilization in a harmful manner, at the same time being sufficiently flexible to yield to a definite need and demand for the opening up of an area to a different type of use than that for which it had previously been set aside. Like all other governmental measures, the success of zoning rests largely in wise administration.

Zoning authority extending at least to some municipalities had been granted in all States, but additional zoning legislation was enacted in Kentucky, New Jersey, and Virginia at the 1930 legislative sessions, and other minor zoning laws were enacted during the year in other States.

The expansion in zoning in smaller communities is regarded as a recognition of the fact that the environment for work, play, and pleasant home life may be improved through the prevention of hurtful invasions into the various zoning districts by incompatible uses. These invasions are as detrimental to the small community as to the large city.

Another significant development containing many possibilities for improved enjoyment of the outdoors is the enactment of zoning ordinances by townships in several States. Through this adaptation of zoning the control of land uses is applied to larger areas of more or less open development. Among other things, it offers a valuable means of improving roadside condi-

tions. It has largely been applied in resort and suburban areas, but it is equally applicable elsewhere.

The greatest activity in zoning in 1930 was in New Jersey, 33 municipalities either adopting new ordinances or revising and amending their existing ordinances. New York showed the next greatest activity, and California was third, with Ohio, Massachusetts, Iowa, and Michigan following in the order named.

Ordinances were amended or adopted, moreover, in 30 other States.

New York ranks first in the number of zoned municipalities, having 159 of the total of 981 for the country. New Jersey is second with 120 and California third with 98.

The majority of the zoning ordinances in effect on January 1, 1931, are comprehensive in scope. Of the total, 655, or 68 per cent, regulate the use, height, and area of buildings. Of the 77 new ordinances adopted last year, 45 are considered comprehensive.

The only city of more than 100,000 population that adopted a zoning ordinance for the first time in 1930 was San Antonio. Only 11 of the 93 cities in this population group are without zoning ordinances, and reports from them indicate a substantial activity in zoning study. Philadelphia, the third largest city of the United States, is one of these cities. Five cities having 40,000 to 100,000 population passed zoning ordinances in 1930. They were Springfield, Mo., Springfield, Ohio, Elmira, N. Y., Union City, N. J., and Phoenix, Ariz. Many of the unzoned cities in this group are also carrying on zoning studies.

An analysis of the remaining municipalities that enacted ordinances during 1930 for the first time shows that there were 10 cities having less than 40,000 and more than 20,000; 12 having less than 20,000 and more than 10,000; 19 having less than 5,000; and one county of 65,000 population.

The development of aviation has brought new problems into the field of zoning in the regulation of the height of structures in areas adjacent to aviation fields. A number of studies have been made of the problems involved, an important contribution being made last year in the issuance of a report of the committee on airport zoning and eminent domain, working under the auspices of the Aeronautics Branch of the Department of Commerce.

The report stated that under the police power the main protection of airports from uses of abutting or neighboring land is in the regulation of these uses by zoning. It was pointed out by the committee, however, that there can be no such regulation solely in the interest of the port, but that, rather, such regulation must be for the protection of the interests of the public itself in its enjoyment of aerial transportation.

ELIMINATING THE "JUST AS GOOD" QUALITY OF PAPER

The Federal Government Has Purchased Paper on Quality Specifications for More than 20 Years

By R. H. SIMMONS, *Government Printing Office*¹

Standardization in the paper industry may be roughly classed under three heads—size, weight, and quality. Standardization of quality has met with the most opposition from paper manufacturers, and is the bone of contention when standardization is mentioned.

It is evident that standardization of sizes should take the interest of the consumer into account as well as those of the producer. Some odd sizes must still be produced, but the standardization of sizes has been of assistance in the standardization of office equipment, press sizes, and paper converting machinery. It has also reduced to a minimum the number of stock sizes carried by manufacturers. The manufacturer can increase the quantity of these standard items with a reasonable assurance that there will be a demand for them. It also helps the purchasing agents in that they are assured a ready supply. They can standardize their forms to match the standard sizes of paper and cut the cost of excess waste in conversion.

The standardization of weights of paper has also been fairly well taken care of by the manufacturer. Simplified Practice Recommendation No. 22 (a National Bureau of Standards publication) included the recommendation of a basis weight size of 25 by 40 inches, since calculation to 1,000 square inches is easier to figure than calculation to 17 by 22 as for bonds or 25 by 38 as for book papers. The adoption of the standard 1,000-sheet unit in place of reams varying in count from 480 to 516 sheets is another step in the right direction. This simplifies calculations for the printer, who sells in units of 1,000.

The standardization of quality, however, has been woefully neglected as far as the paper maker is concerned. There have been several attempts to bring about standardization in quality, but the effort was not sufficiently sustained. The fact that the quality of paper can be standardized has been demonstrated by the United States Government, which for more than 20 years has bought its paper on quality specifications. There has been considerable opposition to these specifications at various times by individual contractors, but the fact that the opposition was not justified is becoming more and more evident, as shown by those manufacturers who readily make paper to conform with specifications. Thirty-nine manufacturers and jobbers submitted bids this year on the annual contracts for 408 items of paper purchased for use in Government printing and binding. All bids must be on specification; if a bidder submits merely a sample his bid is not considered.

The original specifications drawn up by the Government for the purchase of paper were necessarily rather meager, due to lack of data as to what consti-

tuted satisfactory paper. At the time these specifications went into effect there were few instruments for paper testing, and so there were few tests made. In 1925, the United Typothetae of America and the Government Printing Office cooperated in testing a large number of samples of commercial bond and ledger papers. The report on these tests included tentative specifications for bond and ledger papers which were later adopted for use in the purchase of these papers used by the Government. Additional factors to aid in insuring permanency constitute the few changes which have since been made in these specifications.

That there should be standards of quality in paper as well as in other products of manufacture has been recognized by many of the leading paper manufacturers. Standards are creeping into various parts of the paper industry, but the major class of papers—namely, printing and book papers—have not been touched by the trade. Fine papers, such as bonds and ledgers, are maintained by some individual manufacturers to their own standards.

Several mills have gone so far as to watermark their papers according to the grade which the paper is supposed or guaranteed to meet. They have standardized their products according to their own grades, which are not necessarily comparable to the grades of their competitors. Many paper companies have standardized in this manner, but are apparently not willing to adopt the national standards which would result from a definite program of standardization by the paper industry.

To be successful, standardization must show a benefit to the consumer as well as the producer. The standardization of paper will be constructive and not destructive. The reduction of the number of grades of paper should be an advantage to both producer and consumer. If a mill can cut its stock from 40 grades to 20 or less, a saving should result in that there will be only half as many changes of "furnish." Every paper maker knows how much this would mean in his mill. Nothing cuts down the production so much as continual changing of "furnish." Then, the number of grades which they will have to stock will be cut one-half, which in turn will cut the cost of inventory. These are a few points in favor of standardization for the paper maker.

From the purchaser's point of view standardization should give better value for money expended and better quality in that the paper maker should be able through the increased manufacture of a few grades to improve the quality of his product and at the same time cut costs.

Standardization should increase the speed of deliveries due to manufacturers and merchants stocking the standard grades in larger quantities. It should simplify purchasing due to the fact that fewer grades, with more marked differences between them, would not confuse the purchaser. Standardization of quality would not permit of the "just as good" salesman

¹Abstract of an address delivered before the Sixteenth Annual Convention of the National Association of Purchasing Agents, Toronto, Canada, June, 1931.

offering an inferior product. Standard grades of paper would make it decidedly easier to get the same grade and quality for reprints or for such jobs where there is an annual publication, and it is desired to keep the same grade and color.

Color, finish, and formation are mill characteristics and since the appearance and distinction of the finished job depends to a considerable extent on them, a good portion of the cost of the paper is often represented by these items. It is conceivable that of two papers of the same basic quality one might cost, and

be well worth, considerably more than the other, due to its superiority in these respects.

Standardization of paper should result in a decided saving and ease in estimating costs for printing. It would eliminate guesswork and make it possible to buy or order printing on a more businesslike basis. In other words, standardization will put a common language into the hands of the paper maker and the purchaser of paper by which they can carry on their business in more harmony than has been heretofore evidenced.

ACTIVITIES OF THE AMERICAN STANDARDS ASSOCIATION

New Standards and Specifications Approved—Revision of Codes and Specifications Under Way

Current developments of the following standardization projects under the auspices and procedures of the American Standards Association have been furnished by that association:

Portland cement.—Specifications for Portland cement, divided into two standards in the latest revision, have been approved as American standards. The two divisions of the standard are: A1a-1931, Standard specifications for Portland cement; A1b-1931, Standard methods of testing Portland cement.

The original standard was one of a group over which the American Society for Testing Materials exercises sole sponsorship, under A. S. A. procedure. The sectional committee which prepared the revision is an enlargement of the A. S. T. M. committee on cement. Through the addition of the members more adequate representation of the industry was obtained.

Reorganization of sectional committee.—The A. S. A. Standards Council has approved the complete reorganization of the sectional committee on the Safety Code for Brakes and Brake Testing. Since the present code, which was approved in 1927, covered only 2-wheel braking systems for passenger cars, a revision is necessary to include all types of braking systems now in use on passenger cars and trucks.

The reorganized committee, under the sponsorship of the American Automobile Association and the National Bureau of Standards, will begin active preparation of the revised code as soon as sufficient funds have been provided to carry on the research work contemplated by the committee.

As the result of the work of a sectional committee under the sponsorship of the American Mining Congress, which has been active since 1924, the Safety Code for Coal Mine Transportation has been approved as American recommended practice. Five complete drafts of the code were prepared by the committee before a standard—satisfactory to all interests—was obtained. The new standard deals with transportation on level and inclined tracks, both underground and in the mine yards; and haulage, whether by motors, animals, or men. Complete systems of signals and safety rules are given.

A revision of the Safety Code for the Protection of Industrial Workers in Foundries is being prepared by the newly organized sectional committee under the sponsorship of the American Foundrymen's Association and the National Founders Association. The per-

sonnel of the committee was approved by the A. S. A. Standards Council at its meeting on June 8.

The original code was approved in 1922 as American tentative standard. It is now proposed to bring the code up to date and advance the status to American standard.

Since the recent approval of the scope of the proposed safety code for grand stands, work has been going forward in the organization of subcommittees to prepare tentative drafts of various sections of the code. The sections which are in process of preparation will include the following subjects: General design and construction, concrete structures, portable steel and wooden structures, permanent steel and wooden structures, and fire protection and exits. The scope of the project, which has just been approved is as follows:

The design and construction of permanent and temporary outdoor stands and temporary and portable indoor stands for the seating of audiences, stability and strength, volume and facility of exits from the standpoint of flow of traffic and prevention of panic jams, fire hazards and the provision of fire-fighting equipment for wooden or other combustible stands, sanitary arrangements, methods of erection of temporary and portable stands.

New methods of installation of equipment.—Provisions concerning new methods of installation of equipment and new materials have been incorporated in the fifth draft of the proposed safety code for window cleaning which has just been sent to letter ballot of the sectional committee. If the draft is approved by the members of the committee, it will be presented to the executive committee of the National Safety Council, sole sponsor for the project, for approval and submission to A. S. A.

Specifications for zinc-coated (galvanized) sheets.—The specifications for zinc-coated (galvanized) sheets (A. S. T. M. standard A 93-27) were approved as American tentative standard on June 20, with the designation G8b1-1931. The specifications were submitted to A. S. A. for approval by the American Society for Testing Materials, sponsor of the Sectional Committee on Specifications for Zinc Coating of Iron and Steel.

American standards for wood poles.—The American Standards Association has approved the following American standards for wood poles: Dimensions of northern white cedar poles (O5b2-1931), dimensions of western red cedar poles (O5c2-1931), dimensions

of chestnut poles (O5d2-1931), and dimensions of southern pine poles (O5e2-1931). The following have been approved as American tentative standards: Specifications for northern white cedar poles (O5b1-1931), specifications for western red cedar poles (O5c1-1931), specifications for chestnut poles (O5d1-1931), specifications for southern pine poles (O5a1-1931).

The standards are the result of six years of work by the sectional committee, which has taken into consideration data compiled for the use of the subcommittee on fiber strengths, and were used in the preparation of the American standard, ultimate fiber stresses for wood poles (O5a-1930), approved in December,

1930. The work of the subcommittee on knot limitations was also of assistance. Graphs showing the numerical distribution of knots of various sizes in representative lots of poles were prepared; and from these curves, tables of knot limitations were drawn up. These constitute part of the specifications.

The circumference dimensions, at 6 feet from the butt, are based on the standard ultimate fiber stresses, poles of the same class of all four species being rated as having equal initial strengths. Minimum circumferences are specified for the tops. The dimensions and specifications have been published as four pamphlets, each pamphlet containing the dimensions and specifications for one species of wood.

AMERICAN SOCIETY FOR TESTING MATERIALS

Scope of Current Standardization Projects Reviewed

The following current information concerning developments in standardization projects under the auspices and procedures of the American Society for Testing Materials has been furnished by that society:

New tentative standards.—The society approved by action at the annual meeting the publication as tentative standards of the following 17 new specifications and 8 new methods of test, which increases the total number of current tentative standards to 169.

Metals.—Specifications for normalized and tempered alloy-steel forgings for locomotives, drawn or rolled 80 per cent nickel, 20 per cent chromium alloy for electrical heating elements; drawn or rolled alloy, 60 per cent nickel, 15 per cent chromium, balance iron, for electrical heating elements; aluminum-base alloy die castings; and zinc-base alloy die castings; method of test of chemical analysis of silver solders; determining the temperature-resistance constants of resistance alloys.

Concrete.—Specifications for curing Portland-cement concrete; curing Portland-cement concrete slabs with bituminous coverings; curing Portland-cement concrete slabs with calcium chloride admixture; curing Portland-cement concrete slabs by surface application of calcium chloride; and curing Portland-cement concrete slabs with wet coverings. Methods of test for structural strength of fine aggregate using constant water-cement-ratio mortar; routine analysis of the cement content of hardened Portland-cement concrete; and test for apparent specific gravity of coarse aggregates in a saturated condition.

Paint solvents, pigments, enamels.—Specifications for acetone; beta ethoxy ethanol (synthetic); and for beta butoxy ethanol (synthetic); method of test for tinting strength of pigments; and for testing nitrocellulose clear lacquers and lacquer enamels.

Rubber products.—Specifications for rubber-pump valves.

Textile materials.—Specifications and test methods for cotton goods for rubber and pyroxylin coatings, for 0.007-inch cotton tape, and for enameling duck for the tire industry. Method of determining relative humidity.

The following four specifications were also approved for publication as tentative to supersede, when

adopted, present standards having corresponding titles and serial designations: Specifications for steel plates of flange and fire-box qualities for forge welding; gypsum wall board; gypsum lath; and tolerances and test methods for silk and cotton tapes.

The annual meeting of the society also directed that the following 18 tentative standards and proposed revisions of 14 existing standards be referred by letter ballot vote to the membership for adoption as standard.

Tentative standards to be adopted as standard.—Tentative specifications for aluminum-base alloy castings, aluminum-base casting alloys in ingot form, aluminum-alloy (duralumin) sheet, aluminum-manganese alloy sheet, aluminum-powder for paints (aluminum bronze powder), gold bronze powder, and the toxic ingredients in antifouling paints. Tentative methods of testing brick (compression, flexure, and absorption); alkalinity or acidity of pigments; bleeding of pigments; hygroscopic moisture (and other matter volatile under the test conditions) in pigments; oil absorption of pigments; routine determination of acetone extract in dry lampblack and dry bone black; determination of polishing lubricant in aluminum powder for paints (aluminum bronze powder); size of anthracite; water absorption of slate; and flexure testing of slate (determination of modulus of rupture and modulus of elasticity).

Tentative definitions of terms relating to refractories (terms "spalling" and "pyrometric cone equivalent").

Revisions of existing standards.—Standard specifications for alloy-steel bolting material for high-temperature service; welded wrought-iron pipe; high-test gray-iron castings; hydrated lime for structural purposes; specifications and tests for hollow burned-clay load-bearing wall tile; hollow burned-clay fireproofing, partition, and furring tile; hollow burned-clay floor tile; basic carbonate white lead; and red lead. Standard methods of test for softening point of fire-clay brick; making and storing compression test specimens of concrete in the field; securing specimens of hardened concrete from the structure; and testing electrical insulating oils.

Standard definitions of terms relating to hollow tile.

WASTEFUL VARIETY IN COAL-MINING EQUIPMENT PROVES COSTLY

Standardization Program of Industry Has Served to Reduce Cost of Operation and Yet Improve the Safety Factor

By J. M. HADLEY, *The American Mining Congress*

Common usage has developed standards of practices, weights, and measures as well as standards of quality for commodities. These have come into general use through the ages to survive as long as their usefulness continued, only to be discarded when of no further value. The indictment that standardization means stagnation, so frequently heard in this generation, is hardly fair. Quite the reverse is true, for standardization is dynamic, not static. It does not mean standing still, but rather moving forward together.

A standard of practice or of equipment represents the best thought of an industry concerned with its use, and furnishes the best possible means to eliminate wastefulness and promote efficiency. Naturally, it is desirable to revise and, in some cases, discard standards as better methods are brought forward and as better machinery and equipment are developed; new standards then take the place of old.

The mining industry started its standards program shortly after the close of the World War. Traveling the rough road of experience, this country has learned that a standard means something in the purchase of the vast supplies for the armies of the world.

When the American Mining Congress organized the coal mining branch of its national standardization division to standardize coal-mining methods, practice and equipment, Col. Warren E. Roberts, who had been affiliated with the coal-mining industry for many years, and served during the World War as a member of the staff of the Quartermaster General and was active in bringing order out of chaos in the purchasing of Army supplies, was appointed the national chairman.

The standardization program of the coal mining branch was an ambitious one, calling for sectionalizing coal-production methods. This was brought about through the development of 17 major projects, each properly subdivided and headed by a man who had done conspicuous work along the line under consideration. The idea immediately took root; about 300 men joined in the campaign and amazing results have followed.

Committees undertook actively such projects as a standard code for installing and using electrical equipment underground, standards for drainage, ventilation, tracks, wire rope, and many others. That was 11 years ago, and the names found on those original committees represent a real "Who's who in coal mining" to-day. An attempt will be made in this article to tell how, why, and what has been accomplished by this branch of the national standardization division of the American Mining Congress.

Consisting largely of coal-mine operators, the original committees had only a smattering of representatives from the manufacturing field. It was early found, however, that many other factors were involved, if the proposed program was to be successful.

Immediate reorganization of the committees was undertaken to include representatives of the manufac-

turers, whose equipment was involved and whose cooperation was essential if the work was to go forward. Further, it was found that the Government was no small factor in the field. Certain recommendations had already been evolved by the United States Bureau of Mines, which were held to tenaciously.

When the work finally got under way, the coal-mining branch was organized to include (1) the coal-mine operator; (2) the manufacturer of coal-mine equipment; (3) United States Government; (4) representatives of all national associations, including safety organizations, insurance groups, mechanical, electrical, and civil engineering groups; and (5) a small number of nationally known consulting engineers for the coal industry.

The work went forward rapidly from that point. Regular meetings were called at convenient places, and through much consultation and correspondence, potential standards were issued and sent to the coal-mining industry. National attention was attracted to them. The American Engineering Standards Committee (now the American Standards Association), issued an invitation to this group to present its standards under, and by authority of, that national standardizing body.

As a clearing house for mining standardization, the American Standards Association created the mining standardization correlating committee. This committee developed the group of coal-mining standards that are to-day the pride of the American Mining Congress, their promulgator and sponsor, and the industry they serve.

From the welter of sweat, brains, and determination, and through the cooperation of all these agencies, the industry now has national standards representing the following subjects, approved by the highest standardizing bodies: Safety Rules for Installing and Using Electrical Equipment, 1926 (U. S. Bureau of Mines and American Mining Congress, joint sponsors); Coal-Mine Drainage, 1927 (revised in 1930); Tracks, Signals, and Switches, 1927; Wire rope, 1927; Miscellaneous Outside Coal-Handling Equipment, 1926; Ladders and Stairs for Mines, 1928; Ventilation, 1929. (Completed but not under A.S.A. procedure.)

Cooperating with other organizations which have acted as the sponsors, the standardization division has assisted in the bringing out of two additional standards that have far-reaching effects: Recommended Practice for Rock Dusting, approved in 1928; A.I.M.M.E., and Recommended Practice for the Use of Explosives in Bituminous Coal Mines, Mine Inspectors' Institute of America, approved in 1930.

Many projects remain to be completed and many more have been proposed for consideration. Continually new projects are suggested to the division for development. Standards covering the preservative treatments of mine timbers and a standard safety code for coal-mine transportation are now nearing comple-

tion. Added to all these, committees are engaged in the development of a standard classification of coals with the American Society for Testing Materials as sponsor; and specifications for locomotives for coal mines, including trolley, storage battery, and combination types, with the American Mining Congress and the National Electrical Manufacturers' Association acting as joint sponsors.

The activities of the mining and loading section of the coal mining branch of the national standardization division, have had especially far-reaching effects. This section in the early stages in mechanical-loading development found little that would lend itself to standardization, and, therefore, confined activities to the collection and dissemination of information regarding successful mechanical loading installation. Out of this activity grew the National Committee on Mechanized Mining now making an extensive study of the subject.

For the time being, therefore, the mining and loading section became inactive and subordinate to the National Committee on Mechanized Mining, but it was arranged that, as the work progressed, and as mechanization became universal, certain items that showed possibilities of standardization should be referred to the section for consideration, development, and action. The point has now been reached where it is apparent that several such items have presented themselves. These are: (1) Standardizing new powder, cartridge sizes; (2) drill-hole sizes; (3) conveyor pans; (4) conveyor sprockets; and (5) conveyor chains.

Consideration was given these recommendations at the meetings held in Washington, D. C., on December 4, 1930, when both the National Committee on Mechanized Mining and the mining and loading section held group conferences.

Two new projects to be undertaken in the near future are of particular importance. The first involves the design and details of construction for coal-mine cars, and the other fire-fighting and fire-prevention methods. In the case of the former, the desire for this standard has long been felt, evidencing itself several years ago. It resulted in the organization of a committee to do the work. Many obstacles intervened; perhaps both manufacturers and operators not originally connected with the movement feared that it was proposed to limit individuality of structural features.

The hope is merely for some interchangeability of parts and possibly a decrease of car cost. In this case, rather than call it standardization, we might use the term "abandonment." All will agree that some designs could be abandoned to the benefit of all concerned. The spread of mechanization and the general movement to increase underground operating efficiency and demand new types and sizes of cars. Now, it is believed, is the time to arrive at some general standards which new installations can follow.

If general agreement can not be reached to standardize the cars themselves, it is certainly worth while to consider the tremendous possibilities for economies, if only some of the elements of construction of coal-mine cars can be uniformly standardized.

The "run-of-mine" day in coal operation witnesses the use of hundreds of standards that are not thought of as such. Several important standards cover bolts, cement, concrete reinforcing spiral steel rods, fire hose and fire-hose couplings, machine tools, motor ratings, pipe flanges and fittings, pipe threads, rails, rivets, screw threads for bolts, machine screws, nuts and commercial tap holes, shafting, and wire.

Seldom, if ever, are these recognized as representing the conscious effort of some organization or group of organizations to standardize. These as well as the mining standards enumerated above, represent a barrage of heavy artillery that can be effectively laid down to make the enemy position of high production cost untenable. These missiles of modern business warfare should be put to use intensively and intelligently. Many others should be created to follow up. Without the use of many of the existing standards, the condition of industry to-day would be chaotic.

Wasteful variety in design and construction of mining equipment is inexcusable and expensive. Wasteful and unsafe practices are still more expensive and even less excusable. The movement is naturally away from such waste, as a brief look in retrospect at mining conditions will quickly reveal. This movement is being accelerated by the activities of 300 men who are earnestly engaged in the activity of creating coal-mining standards.

The fulfillment of this great program for coal lies in the general adoption and use of the standards by every single coal company in the country and the interest and assistance of these companies in the formulation of new ones as needed.

EGG GRADING NOW UNIVERSAL

Eggs may be only "fresh" or "otherwise" to most consumers, but to the egg trade in 20 countries, quality of shell eggs is now more or less uniformly expressed in terms of air cells, condition of shells, yolks, whites, and germs.

Egg quality standards, according to the Bureau of Agricultural Economics, United States Department of Agriculture, are now recognized in 20 countries. Of 17 foreign countries, 15 maintain standards in connection with an export trade in eggs, and 2 countries—Germany and the United Kingdom—recognize standards for the domestic trade only. There is considerable uniformity in the standards.

Canadian egg standards were the first to be systematically formulated. United States standards were

prepared later, and followed in essential respects the Canadian standards. Foreign countries in general have considered the same quality factors in formulating egg grades, and have adopted practically the same methods of describing the various degrees of quality.

In practically all of the standards, the specifications for the air cell deal with its depth. Similarly, differences in quality, as evidenced by the condition of the yolk, are indicated in terms of visibility of the yolk. Countries which have established standards of quality for shell eggs are: Belgium, Canada, Danzig, Denmark, England, Estonia, Finland, Germany, Latvia, Lithuania, Ireland, Netherlands, Norway, Poland, Rumania, South African Union, Sweden, Union of Socialist Soviet Republics, United States, and Wales.

TOLERANCE AND TOLERANCES

A Discussion of Permissible Variations from Weights and Measures Standards of Value and Performance

By RALPH W. SMITH, *National Bureau of Standards*

Tolerance in its broad sense and tolerances in the weights and measures sense, though closely related, are essentially different; but each has its place—and an important place—in weights and measures administration.

It is first necessary to establish clearly just what is meant by “tolerance” and by “tolerances.” The word “tolerance” is used in its general sense of a disposition to be patient with or indulgent to the opinions or practices of others. For example, the tolerant individual is characterized by freedom from undue severity in judging the conduct of others. Expressed somewhat differently, tolerance is a condition of mind, reflected in the reactions of the individual to the events, the persons, the things, and the ideas comprising his environment, whereby forbearance is shown with reference to matters with which the individual is not himself fully in sympathy.

And now as to “tolerances.” The word “tolerances” is used in the weights and measures sense of written rules, established by competent authority, designed to control definitely the physical or performance characteristics of things subject to official inspection. In other words, tolerances are the maximum variations from the true standard which are to be permitted by the weights and measures officer when he makes his official tests.

Let us consider some of the characteristics of tolerance and of tolerances, and at the same time contrast them, so that their essentials and their differences may be emphasized. Both tolerance and tolerances are relative, in that each can exist or can be exercised only with reference to some standard. But tolerance is general; tolerances are specific. Tolerance is elastic and not susceptible of close definition; tolerances are fixed and are, of necessity, defined with exactness. Tolerance varies with the individual; tolerances are intended to be invariable and subject to but one interpretation. Tolerances set up numerical limits of permissible tolerance. With the fixing of tolerances in a given field, the discretionary exercise of tolerance therein is eliminated; that is to say, tolerances preclude further tolerance.

In weights and measures administration the standards which are set up, with relation to which tolerance may be exercised or tolerances observed, are those established by statute or by rule and regulation under statutory authority. These include standards of conduct and standards of weight or measure. An ideal situation would be one in which these various standards were fully and precisely met at all times. But practically this is impossible. Faced with human and mechanical imperfections as we have always been and as we will continue to be until the arrival of the millennium, some departure from every standard is to be anticipated. Even our material weights and measures standards—test weights, capacity measures, linear measures, etc.—are not perfect; designed as they are for testing purposes, carefully made from selected ma-

terials, and painstakingly adjusted, they still differ from the theoretical standards by greater or lesser amounts. The impossibility of perfect equality is conceded; the inevitability of error is recognized. Safety is secured, however, by limiting the magnitude of the error to a value which, for the standard in question, is below the danger point, and in addition, in very precise work, by determining the magnitude of this error and applying a suitable correction when the standard is used.

Now, if it be true that material standards, precisely made under closely controlled conditions, fail of perfection, how much more is it to be anticipated that human conduct will fail to measure up to the standard of perfection established by our weights and measures statutes. For in his business dealings, as in other pursuits, man is swayed by his emotions, his personal conception of his own and others' rights, his natural cupidity, and the stress of circumstances under which he labors.

So it is that in weights and measures administration we are faced with the necessity for this course of action: That a reasonable tolerance be exercised with respect to those standards which are not susceptible of or which do not readily lend themselves to numerical treatment and that reasonable tolerances be established and observed with respect to those standards which are susceptible of numerical treatment. Such action is necessary to the end that the rights of all interested parties may be conserved without the imposition of unnecessary restraint, hardship, expense, or losses upon any one of them.

“Reasonableness” is perhaps the principal criterion in this connection; it is our justification for permitting a departure from the standard, and at the same time it should dictate the extent of our clemency. The official who is unreasonably severe is subject to censure as well as the one who is unreasonably lenient; neither will equal the accomplishments of the officer who chastens with moderation yet does not pamper with inordinate forbearance.

You may ask, “Is it not highly desirable that these instrumental errors be reduced to a minimum?” To which the answer would be that this is desirable within reasonable limits but that an extreme position in this relation is to be avoided. Errors should be held down to a point where they will not seriously affect the rights of either buyer or seller, but unnecessarily strict demands should not be made, because to do so will increase the difficulties, and consequently the costs, of manufacture and maintenance, and this increased cost burden—which always reaches the consumer eventually—will be incurred without corresponding benefits.

As to the supervisory side of weights and measures work, perhaps the cases which the official brings to court form one of the best criteria of the kind of tolerance which he is exercising. The subject of weights and measures prosecutions is discussed in considerable

detail in National Bureau of Standards Handbook No. 11, and the following short extract from that discussion is appropriate to the present consideration:

Notwithstanding the customary language of the weights and measures statute to the effect that the official shall institute a prosecution upon the discovery of a violation of the law, this should not be construed to mean that a prosecution must invariably be instituted every time any violation of the provisions of the statute is discovered. To do so would result in unfairness to many, the court calendars would be crowded with large numbers of cases of a kind never intended by the legislature to be brought into court, very many of these cases would necessarily be lost by the State to the consequent discredit of the department or official responsible for starting them, and the effectiveness of weights and measures supervision would be greatly decreased instead of increased. It is an unwritten but well recognized principle in connection with all law enforcement that certain discretionary power resides in the executive officer as to when prosecution shall be resorted to, and this principle is just as applicable to weights and measures supervision as to any other branch of governmental control.

Here, of necessity, the official must rely upon his judgment which will improve with his experience; no mathematical table can be arranged which will tell when to prosecute and when not to prosecute. Violations of the statute identical in themselves may properly result in prosecution in one instance and not in another. In reaching his decision the official must be guided by the results of a careful consideration of all of the circumstances attending the violation, with the ultimate object of securing the greatest degree of protection to all without undue hardship to any. Punishment should be sought where punishment is believed to be deserved and where some constructive good can be accomplished by inflicting it; punishment should be avoided where it is believed that greater good can be accomplished by other means.

As it is with prosecutions, so it is with many other phases of supervisory work. While realizing the necessity for the exercise of a proper tolerance, the thoughtful official will guard against laxity and carelessness in his enforcement program, will remain observant of conditions at all times, and will be alert to check every abuse within the scope of his authority before it becomes a menace to the integrity of the commercial weighing and measuring under his supervision. And he will endeavor, in so far as possible, to gage his tolerance in these matters to a uniform standard of fairness, impartiality, and reasonableness.

But as to the mechanical side of weights and measures work, having to do specifically with weighing and measuring devices, the desirability of effecting standardization is readily apparent. Numerical treatment of the permissible errors on mechanical equipment is logical and entirely practicable. It is desirable because the accuracy of piece of apparatus concerns the manufacturer of the apparatus, his service representatives, the user of the apparatus, and from one to sev-

eral weights and measures inspectors, and without a definite schedule of allowable variations no one of these interested parties can know what to expect from the other with respect to the degree of accuracy produced or demanded. It is practicable because in the case of apparatus we are dealing primarily with machines rather than with men; performance characteristics may be very definitely determined, and numerical limits may readily be applied to deviations from the standard; and these limits may be applied easily and uniformly by any number of interested persons, acting independently.

Thus, when properly observed, tolerances insure uniformity of treatment of all devices of a given group, whether made by the same or by different manufacturers and whether tested by one or another inspector.

It should now be clear that the most important difference between tolerance and tolerances is that wherever tolerances have been fixed further tolerance should not be granted. If the tolerances are proper and reasonable, they represent the maximum of liberality which should be extended toward equipment within their purview, because all of the relevant factors are presumed to have been given consideration when the numerical values of the tolerances were decided upon. Tolerances are supposed to represent the greatest errors which will be countenanced. It is zero error and not the tolerance value which represents the standard, and the tolerances are the limits beyond which the errors should never be permitted to go.

Thus, in conclusion, it is urged that weights and measures officials be guided by two general policies: First, with respect to supervisory activities where numerical tolerances are not appropriate or practicable, observe a reasonable tolerance founded upon careful judgment and avoiding the extremes of too great severity on the one hand and too great leniency on the other. Second, with respect to mechanical activities involving the testing of weighing and measuring apparatus. Wherever tolerances have been adopted for your guidance, enforce them. If our tolerances are reasonable and proper, they should be enforced. If they are unreasonable and improper, the remedy lies not in being tolerant in the enforcement of them, but in having their values so changed that they can be enforced with a clear conscience. Unenforced tolerances on the books of regulations are like unenforced laws on the statute books—they generate a disrespect not only for themselves but for other regulations as well. As to mechanical equipment, the proper enforcement of properly established tolerances denies to the official the individual exercise of additional tolerance. Only trouble and uncertainty can follow a policy of tolerances plus tolerance.

INTERNATIONAL ASSOCIATION FOR TESTING MATERIALS TO MEET AT ZURICH

The first international congress of the new International Association for Testing Materials will meet at Zurich, Switzerland, September 6 to 12, 1931, in accordance with the decision of the International Congress for Testing Materials held in Amsterdam, September, 1927.

The object of the congress is to promote and to facilitate the international exchange of ideas in the field

of material testing. A limited number of present-day problems will be put forward and discussed, the selection of problems having been determined by modern requirements and tendencies. The congress will enable each member to expound the various points of view according to the various countries, and the diversity of experimental methods employed in the study of materials. It will demonstrate the capital importance of international exchange of ideas and of knowledge acquired.

AMERICAN INDUSTRIES PLAY PART IN NATIONAL DEFENSE

Standard Items of Everyday Use Provided for in War Plans, Involving 15,000 Factories

By FREDERICK H. PAYNE, *Assistant Secretary of War*¹

Following the World War there was a consensus of feeling everywhere that the experiences gained should be capitalized in appropriate legislation. Major defects in military organization caused much of the difficulty and confusion in the World War. Those defects with which we are concerned here were those relating to the procuring activities of the Army.

No effective coordinating agency was set over those branches of the Army that were responsible for the procurement of military supplies and munitions. The several branches and services reported directly to the Secretary of War and naturally in the stress of greatly augmented activity of war no one officer could possibly coordinate and supervise all. Relief was given in the spring of 1918 when the Overman Act was passed. This permitted the President to reorganize the War Department. Such reorganization, however, was only temporary, and upon the proclamation of peace the old organization would again be set up.

The amended national defense act of 1920 corrected some of the more important defects of the act of 1916. Detailed provisions were made for the mobilization of the man-power resources of the Nation. Like detailed provision was made for the mobilization of the industrial and economic resources of the Nation.

The Assistant Secretary of War assumed his new duties in 1921. His statutory mission divided itself naturally under two headings. First, the control and supervision of the business activities of the War Department in peace and war, and second, the formulation of plans to mobilize and make effective the complete industrial and economic resources of the Nation for the support of military effort.

The first duty was comparatively simple. There has been developed in my office a supervision and control of the seven supply branches of the Army (Ordnance Department, Quartermaster Corps, Medical Department, etc.), which will assure freedom from competitive buying, and the utilization of the best obtainable information for the economical purchasing of needed supplies. Measurable progress has been made in the establishment in the War Department of businesslike systems and methods. The Army has also been alert to, and in step with, the modern trend toward standardization and simplification.

The second duty was not so simple of definition, nor has it been found so easy in performance. In the beginning, time and energy were given to the study and evaluation of the experiences of the World War. It was, of course, necessary to provide an agency through which special training could be given to regular officers and to officers of the civilian components of the Army (National Guard and Organized Reserves). To meet this need there was set up the Army Industrial College.

The next step was naturally the determination by the supply branches, based upon the military studies

of the General Staff, of the requirements in finished articles needed in war to effectuate our military plans. Satisfactory progress has been made in the computation of these requirements.

Having determined in some detail what is needed, the problem of supply has been presented to the industrial leaders of the country. With them has been worked out the extent and content of the contribution of the several industrial establishments of the Nation. So, to-day, we have reasonably dependable estimates of what will be needed and where and in what time we can obtain it. The cooperation of industry in this work has been given in a spirit which assures prompt, orderly, and effective production in war.

Much time has been devoted to the formulation of specifications for Army supplies and munitions, which will be intelligible to industry, which will insure speedy production, and which will utilize to the greatest extent possible articles normally manufactured in peace.

With certain exceptions, plans contemplate the procurement of any one item, by one procuring branch only. This avoids competition in planning, as well as competition later in procurement.

Industrial America has been divided into 14 districts. At the industrial center of each, agencies representing the several supply branches have been set up to deal with, and to plan with, the industrial establishments thereof. The procurement headquarters located in the south are Baltimore, Birmingham, Cincinnati, and St. Louis. At these points are being made plans which look toward the fulfillment of important parts of our estimated war load, and here, too, in time of war, will be carried on the actual business of procurement.

Not including facilities for the supply of food—in which no war problem is anticipated—approximately 15,000 facilities throughout the Nation have been allocated to the several procuring branches. Of these, more than 2,000 are in the Southern States. Present plans contemplate that in a major emergency the Southern States will be called upon to carry approximately 10 per cent of the total war load of manufacture of ordnance. This class of material includes a great variety of items. Orders would necessarily be placed for millions of shells and their component parts, packing boxes, machine tools, gages, fixtures, ferromanganese, ammonium sulphate, small mortars and cannon, and small-arms ammunition, as well as other orders calling for delivery of 2,000,000 pounds of T. N. T. per month. There is, too, dependence upon the South for the major part of the supply of fixed nitrogen. A considerable portion of the steel requirements are also expected from the South. It may be noted that in this respect Alabama, for example, is the most self-sufficient of any State in the Union, both in the production of steel itself and in the inclusion within its borders of requisite raw materials.

The contribution of the South in cotton textiles is equally significant. The raw material, of course,

¹Address delivered July 11, 1931, before the Institute of Public Affairs, University of Virginia, Charlottesville, Va.

comes almost wholly from the South. Under present plans the South would contribute 66 per cent of cotton cloth for uniforms, 82 per cent of denim, 88½ per cent of duck, and in like proportion other cotton textiles. Extensive tests have been made looking toward the substitution of cotton powder bags for silk bags. It is necessary that the cotton be specially treated. There is a definite hope now of success in these efforts. Another important use of cotton of interest to the Southern States is the utilization of long-staple sea-island cotton for airplane fabrics. In harness, the South will contribute 43 per cent, in service shoes 20 per cent, in wagons 63 per cent, and so on.

The mission which Congress has assigned to the Assistant Secretary of War is not fulfilled, even after the formulation of the most comprehensive plans for Army procurement. For the general control of the Nation's industrial effort there must be plans for governmental agencies which will lie entirely outside of the military organization.

In recent months many of these problems have been studied intensively by the War Policies Commission.

This commission, of which the Secretary of War is chairman, is composed of Cabinet officials, Senators, and Congressmen. It was created by Congress to consider methods for removing the profits from and for equalizing the burdens of war. Its investigations have naturally included a consideration of the economic and industrial problems of war. Many eminent men have appeared before this body to offer suggestions concerning the financial, industrial, economic, organization, and other programs that the Government should adopt in the event of a major emergency. The commission's conclusions and recommendations, which are to be submitted to Congress next December, should be most helpful to us in further development of our plans.

The War Department plan that I have briefly sketched to you, we believe, would back the military power of the Nation with its full industrial power. It would assure a mobilization of resources for the conduct of any future war with the widest and fairest possible distribution of economic and human burdens.

STANDARDIZATION OF ELECTRICAL UNITS AN INTERNATIONAL PROBLEM

Electrical units, their modernization, international standardization, precise determinations, and proper application is a subject occupying a great deal of the time of many learned technologists throughout the world. Advancement in the art and science of electrical engineering has given rise to a rather concerted study of electrical units along the lines as just indicated, to say nothing of international effort to arrive at a logical and representative nomenclature. Reflecting the importance and timeliness of the subject, the fourth session of the Asheville convention of the American Institute of Electrical Engineers was devoted to a symposium of four papers on various phases of the subject.

H. B. Brooks, of the National Bureau of Standards, treated at length the unit of electrical resistance, going into its past history and outlining impending changes. He described the mercury ohm as having been so long legalized as a material standard of resistance that it is regarded widely as a permanent institution of relatively precise proportions, but stated that practically it is obsolescent because of the technical difficulties attending its use. The author further characterized the mercury ohm as a necessary but expensive evil holding its place because formerly it could be reproduced more precisely than could the agreement between the results of absolute determination of the ohm. He concluded his presentations saying that the technique of absolute determination has improved until now it may be said to be at least on a par with the mercury ohm as to reproducibility. Consequently, the method should be used to obviate the laborious and time-consuming effort of high-grade men now going into repetitions of mercury ohm determinations.

In a discussion of electrical units and their application, L. T. Robinson, of the General Electrical Co.,

Schenectady, N. Y., emphasized the necessity of providing for the advancement of precise definitions and precision standards to keep pace with contemporary advances in equipment. In speaking of the importance of accurate measurement as far as scientific advance is concerned, he said "progress and improvement are made possible only to the extent that those interested in and working along the line of developing and improving measuring methods and instruments are able to anticipate the needs of those interested in the development and operation of systems, devices, and apparatus."

Pertaining to the international standard of electromotive force and its low-temperature coefficient form, Marion Eppley, of the Eppley Research Laboratory, Newport, R. I., described at length the great difficulty in achieving the physical conditions prescribed in the officially agreed upon fundamental definitions of certain electrical units. He described briefly several different types of so-called standard cells for reproducing physically a standard volt, discussing also various tests made on and the characteristics of the cells. He concluded definitely that his 15 years of work on the cadmium cell have given him "ever-increasing confidence in its reliability," even if it "is by no means foolproof."

Information pertaining to the design of d. c. laboratory type of potentiometers was given by I. M. Stein, of the Leeds & Northrup Co., Philadelphia. The author treated his subject under the following 10 headings: (1) Early history, (2) factors affecting voltage range, (3) factors affecting potentiometer resistance, (4) low-voltage potentiometers, (5) analysis of potentiometer errors, (6) self-checking features of potentiometers, (7) galvanometer considerations, (8) comments on volt boxes, (9) deflection potentiometers, and (10) the potentiometer in industry.

STANDARDIZATION IN TRANSPORT OF ELECTRICAL ENERGY

Development of Standards in the Electrical Field Made Possible Through the Cooperative Efforts of the Industry

By WILLIAM MCCLELLAN and R. H. BARCLAY, *Stone & Webster Engineering Corporation*

Standardization in the transport of electrical power has made more rapid progress during the past decade than ever before. Formerly most systems were operated as separate isolated units, each having some standards adapted to its own needs.

With the advent of interconnection, these problems peculiar to the isolated system which previously had received only a small amount of general consideration, required reconsideration from the broader standpoint of their effect upon the enlarged system and this has furnished the added stimulus for more universal standardization.

The development of standards has been made possible largely through the cooperative efforts of the American Institute of Electrical Engineers, National Electric Light Association, and National Electrical Manufacturers' Association representing respectively the engineering, operating, and manufacturing branches of the industry.

These organizations have not only compiled a large number of standards in their own particular fields, but in cooperation with others have assisted in the production of the National Electrical Safety Code sponsored by the National Bureau of Standards, and the National Electrical Code sponsored by the National Fire Protection Association. The former deals largely with such factors as safety to life or property, and the latter with the minimum electrical and mechanical requirements of electrical installations. Like all standards in an art which is still in a period of development, these codes are modified or enlarged from time to time to keep abreast of recent progress.

Standardization of electrical characteristics, such as voltage, number of phases, and frequency, is virtually obligatory, because, with relatively few exceptions where apparatus has been specially designed, it is not possible to use equipment designed with one set of characteristics on a system operating under different characteristics. For the same reason it is likewise impossible to interconnect several systems of different electrical characteristics without the use of special coupling means.

At the time of their initial adoption, direct current and alternating current, single and 2 phase systems were, in turn, the ultimate in the electrical transmission of energy. The decision was, of course, reached after considering the economic and technical aspects of electrical science as it was then known, and the ability of manufacturers to produce apparatus having the proper characteristics. The elimination and retirement of these systems are now rapidly taking place except for certain special applications where their characteristics are peculiarly suited or where economic considerations are the governing factors. The present standard is to employ the 3-phase, 3-wire system for the transmission of energy in varying amounts from moderate to large quantities.

Twenty-five and sixty cycles, the latter being more nearly universal, are now regarded as standard frequencies. A notable exception exists in large systems, however, in the case of the Southern California Edison Co., which operates at 50 cycles. A multiplicity of distribution and transmission system voltages have been standardized to meet the conditions encountered in the various systems throughout the country, the highest being 220,000 volts. Systems employing this potential exist in California, New Jersey, Pennsylvania, and Maryland, and the most recent application has been made in New England in the States of New Hampshire and Massachusetts.

Certain electrical and physical characteristics of a high-potential transmission system are governed by the conditions of the particular problem under consideration and can be varied by the designing engineers, within certain limits, generally in accordance with standard practice. Natural conditions, however, such as ice, sleet, wind, temperature, lightning, and topography of the country are unfortunately not subject to universal standardization and extremely wide variations in these conditions occur in different parts of the country.

General agreement is to be found, however, in certain details not directly affected by sectional variations in natural conditions, and other details more directly affected will be found in general agreement in particular areas.

In transmission systems where use is made of ferrous and nonferrous metals, textiles, ceramic, and petroleum products, rubber, paper, and timber, the result of standardization has been not only to assist the engineer in specifying the proper material, but has enormously simplified the manufacturing and marketing procedure involved in the progress of raw materials from their natural state to the point of utilization. For instance, standards relating to conductors include specifications for quality, standardized tests, and uniformity in dimensions.

In the case of insulators, there has been so much development in matters of design that standardization has been limited largely to methods of testing and to eliminating some of the older and less used designs in the smaller sizes. Standardization of wood poles has not progressed so very well, largely due to the fact that poles are a product of nature and not of manufacturing processes. Dimensions have been standardized and a minimum quality has been established, but of those which are "passed," no definite standards have as yet been established for segregating them into various grades. Standardization of cross arms has had principally to do with establishing uniformity of dimensions and drilling for distribution arms. A survey is now being made in the field which it is hoped will lead to the standardization of steel towers.

Standardization of physical characteristics, such as the size of apparatus used in the transport of electrical power in terms of its electrical units, physical dimen-

sions, and location of terminals, is particularly desirable from the standpoint of low manufacturing costs and interchangeability of apparatus. Whereas physical dimensions of a particular piece of apparatus may vary somewhat between different manufacturers, electrical capacities, and location of terminals have been standardized within the ranges most commonly found in practice.

Considerable latitude is permitted the manufacturer in the selection of materials entering into the construction of apparatus, but through the agency of the various organizations previously referred to, standards have been adopted by which to judge the electrical and physical limitations of the materials and thereby obtain a measure of their value in any particular instance.

A SIMPLE TIME METER

National Bureau of Standards Constructs Apparatus for Integrating Detached Time Intervals

By H. B. BROOKS, *National Bureau of Standards*

In the use of some kinds of laboratory apparatus it is desirable to be able to integrate detached time intervals. For example, the total time of burning of incandescent lamps, used as standards of light or color, is of importance as affecting their properties.

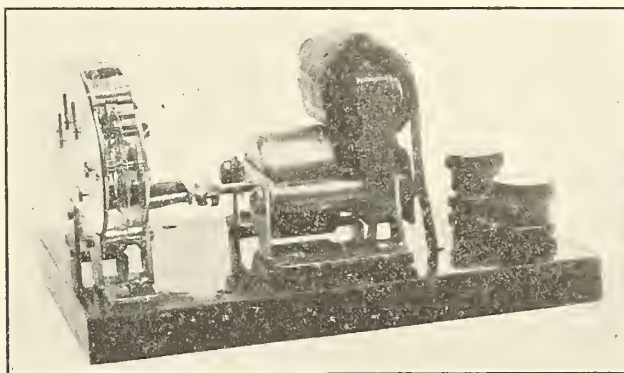
At one stage in the development of the electric power industry in Germany, rates for the sale of electrical energy for the intermittent operation of motors were made on the basis of a certain sum per hour of use. To integrate the total hours of use during a month, "time meters" were developed, some of which were essentially self-starting, electrically operated clocks having heavy iron balance wheels with a period of several seconds. Such a meter, connected in parallel with the motor, would run only as long as the motor was in operation. The timing element of the meter was connected to a register, similar to that of an ordinary watt-hour meter, but registering hours.

A German meter of this sort has been used for years in the optical division of the National Bureau of Standards to register the time of operation of lamps used as color standards. This meter had been bought in the early years of the bureau as a sample of this construction, unusual to American meter practice. It proved useful in the optical division. The attempt to purchase a duplicate revealed the fact that meters of this sort had become obsolete. It was, therefore, decided to take advantage of the controlled-frequency electrical energy supplied by the local power company, as is done in the use of electrically operated clocks.

The ordinary self-starting electric clock is a time meter, and can be used to integrate disconnected time intervals, but it has the disadvantage of having a "register" reading only to 12 hours. It was seen that the combination of a clock motor and a suitable meter register would extend this registration range to 10,000 hours. Two features were desired—first, that the register should be direct-reading, and second, that the registration of relatively short intervals should be readable with accuracy. It was found possible to accomplish both of these ends, using a regular clock motor and a standard meter register, with no intermediate translation gearing.

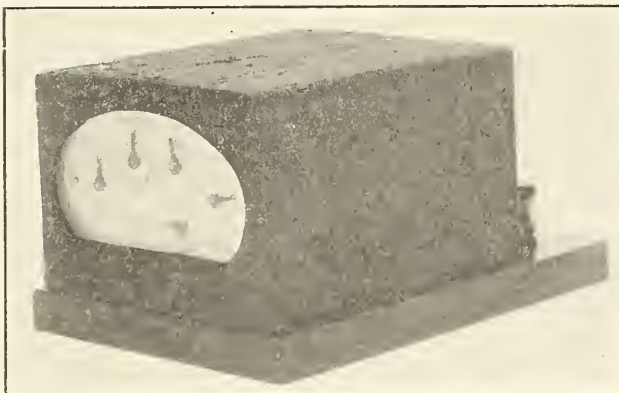
The following illustration shows the "time meter" with cover removed. The "Telechron" motor is supported on the bakelite base by two brackets bent up from heavy sheet brass. The shaft which projects from the motor gear box revolves once per minute

when the motor is connected to a 60-cycle circuit. This shaft is directly connected to the shaft which projects from the back of the meter register.



Time meter with cover removed. The "Telechron" clock motor on the right drives an electric-meter register which records time up to 10,000 hours.

As received, the Telechron motor had a direction of rotation opposite to that required for the direct operation of the register. The reversal of the direction of rotation was easily effected in the manner described in the instructions accompanying the motor.



Time meter complete with cover

The above illustration shows the complete time-meter with cover in place. It will be noted that the register has not only the four dials customary in American practice, but also a smaller dial marked

"tenths." As received from the maker, the register bore the words "kilowatt hours." The erasure of the word "kilowatt" left the register properly marked for its function in the time meter.

It was mentioned above that it had been found possible to couple the motor directly to the shaft projecting from the rear of the register. Obviously, almost any register could be used by the interposition of suitable translating gearing between the two. Such gearing was not necessary because it happens that one American meter manufacturer makes a Canadian-type register with a "register constant" of 600; which means that 600 revolutions of the shaft at the rear of the register produce 1 revolution of the pointer

on the black dial of lowest denomination; that is, a registration of 10 hours. On an accurately controlled 60-cycle circuit the shaft projecting from the motor gear box makes exactly 600 revolutions in 10 hours.

The time meter above described is thus a "clock" which integrates time intervals up to a total of 10,000 hours, readable directly to 0.1 hour and by estimation to 0.01 hour. If the device with which it is to be used is also operated from a 60-cycle 110-volt circuit, the time meter is simply connected in parallel with the device. If the device is operated from some other kind of current, the switch which connects the device to its supply circuit is provided with an extra blade which connects the time meter to a 60-cycle 110-volt circuit.

SELLING GASOLINE ON QUALITY BASIS

Twenty-five States Now Specify Quality of Gasoline Sold Within Their Borders

Twenty-five States now specify the quality of gasoline which can be sold within their borders, according to a new digest of State inspection laws issued by the Western Petroleum Refiners Association.

Thirteen States now require that gasoline meet the Federal specifications. These States are Arizona, Colorado, Florida, Georgia, Illinois, Iowa, Mississippi, Montana, Nebraska, North Dakota, Tennessee, Virginia, and Wyoming.

Colorado requires that gasoline shall not be colored except to identify special qualities. The State will issue licenses to color gasoline after the inspector has passed on the gasoline to see that it has the special qualities claimed. He may revoke the license later if he finds gasoline colored which does not possess these special qualities.

Octane number has made its first appearance in State specifications this year. The North Dakota Legislature amended its law to provide that any gasoline showing antiknock characteristics equal to Octane No. 60 may be colored by the use of any harmless dye. Any gasoline not meeting this standard must be sold without the addition of any foreign coloring matter. The new North Dakota law also gives the State food commissioner and chemist the authority to prohibit the sale of any so-called gasoline improver or dope which may be detrimental to public health or to motors or for which unsubstantiated claims are made. The State may not prohibit, however, the sale of any dopes favorably reported on by the National Bureau of Standards, the Surgeon General, or the Bureau of Public Health.

Montana requires gasoline meeting Federal specifications to be sold, except that it has raised the sulphur tolerance to 0.20 per cent, from the maximum of 0.10 per cent allowed by the Government. Illinois allows the sale of gasoline not meeting the Federal specifications provided it is labeled "substandard."

Twelve States have their own specifications for gasoline which do not correspond to present Federal specifications. Several have kept old Federal specifications. Others allow a 450 end point or have other variations. These 12 States with specific specifications are Alabama, Arkansas, Kansas, Maine, Minnesota, Missouri, New York, North Carolina, South Carolina, South Dakota, Texas, and Wisconsin.

NEW PUBLICATIONS

Fast-selvaige terry towels.—The printed pamphlet on the simplified recommendation for fast-selvaige terry towels (R119-31) is now available for purchase from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents each. This recommendation establishes a simplified list of six stock sizes for this type of turkish towel. Price 5 cents.

Government specifications on boxes.—Federal specifications for boxes of all types, including fiber, solid; fiber, corrugated; wood, cleated-plywood construction; wood, nailed and lock corner; wood, wire-bound, etc., are available in printed form and of standard size, perforated for use in a loose-leaf binder. Price, 5 cents.

Ice cream brick molds and cartons.—Some time ago the industry adopted a simplified schedule of dimensions for the 2-gallon ice cream brick mold, and for machine-filled pint and quart cartons. This recommendation now is in printed form. This program has been instrumental in reducing the number of molds from 30 to 1, and the sets of dimensions for the machine-filled pint and quart cartons from 31 to 2. Price, 5 cents.

Handbook of X-ray safety rules.—Complete rules for the protection of those engaged in X-ray work—physicians, technicians, or other operators—as well as for hospitals, doctors' offices, or similar places where X-ray apparatus may be used, as formulated by the American Advisory Committee on X-Ray and Radium Protection, are contained in a new handbook released by the National Bureau of Standards. This pamphlet is divided into five sections: Protection from X rays, electrical protection, X-ray equipment, and anaesthetic rooms, storage of X-ray films, and operating rules, including personnel working conditions. Price, 10 cents.

The above-listed publications may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices stated.

INDEXING MANUFACTURERS IN CALIFORNIA

Up-to-Date Central Information Bureau to Serve as Buyers' Guide

By WILLIAM R. GAGE¹

Collection and classification of information for a commodity index listing manufacturers and producers of all California products is now under way by the State bureau of commerce, State of California.

In addition to providing a central information bureau for the use of buyers of California commodities, the service will provide special information concerning the sources and geographical locations of producing plants. The work will centralize not only data heretofore collected by public and private agencies, but will supplement and clarify to make available for the first time a complete state-wide tabulation.

Cross indexing will break down the larger classifications to present a clear picture of the specialties produced by each plant. The completed work, unlike the ordinary directory or buyers' guide, will be specific in each detail of production. Twelve thousand manufacturing plants in California will be broken down to several hundred basic classifications, and these in turn will be subdivided to the greatest possible degree.

There exists at present no standardized commodity classification enumerating all the articles and products. The buyer seeks specific articles and can not be satisfied with the general listing such as is now available in assorted unstandardized guides. The prospective purchaser of cotton tea bags, for example, would still be unserved when supplied with 30 cotton-bag classifications, including bags for beans, cement, lime, and flour. To make such a service available, cross indexing is resorted to by duplicate classification.

As an average example of the problem facing purchasers, the general classification of "dryers" is subdivided into 116 minor groups. Of this number 40 are manufactured in California. They must be classified, not only as to what they dry, but how they dry it. They may be used to dry cement, milk, coconuts, fruit, asphalt, laundry, or even glue; they may be of the drum or cylinder type, rotary or steam-jacketed, or they may use a vacuum process. Obviously, the prospective buyer of a steam-jacketed laundry dryer would be helped very little without a cross index to lead him from the 115 other minor classifications. Hundreds of basic groups will be thus broken down to yield specific information available in no other way. The index will, of course, serve not only prospective purchasers, but will provide producers with a key to every possible California outlet.

Sources of basic information will be chambers of commerce, state departments, trade directories, trade associations, telephone directories, and returns from questionnaires.

Once the index is established, the bureau of commerce will maintain it by periodic checking with the sources. Preliminary work indicates that 100,000 separate listings will be made in completing the project. Previous directory "mortality" experience points to an annual change, removal, or addition, of 5,000 listings. The work will probably take from six to eight months, after which it will be ready for printing if the costs are approved.

¹ Chief, bureau of commerce, State of California.

APPROVAL OF FOOD PRODUCTS BY MEDICAL ASSOCIATION

Far-reaching changes in the merchandising of food-stuffs are indicated as a result of the entrance of the American Medical Association into the field of food indorsing and advertising, according to a report made by the committee on food, made to the association's convention, held the first part of June in Philadelphia.

Dr. Morris Fishbein, chairman of the committee on foods, said that manufacturers of packaged foods, realizing the importance of the indorsement by the American Medical Association, had submitted 455 products to be tested by the committee during the first year of its existence. The committee granted the use of the seals of the association to 111 of these products, with action pending on 340 products. Manufacturers whose products are accepted by the committee are allowed to advertise them as "passed by the committee on foods of the American Medical Association."

All foods which have the indorsement of the association will be tested frequently to make sure that the standard of excellence has been maintained, and the advertising will be subjected constantly to the censorship of the association's committee on foods.

DENTAL LATHE GRINDING WHEELS

A simplified schedule of sizes for dental lathe grinding wheels was adopted by a general conference of the industry, held at White Sulphur Springs, W. Va., June 22, in conjunction with the annual meeting of the American Dental Trade Association.

The sizes of the wheels adopted range from 1½ inches in diameter by one-fourth inch in thickness to 3 inches in diameter by one-half inch in thickness, and include a total of 10 sizes, all to have one-fourth inch wide arbor hole, and all to be square edge. The survey of demand upon which this schedule was based showed a total of 91 varieties of wheels in production, considering diameter, thickness, hole diameter, and types of edge.

This recommendation is one of a series of such projects prepared by the simplification and standardization committee of the American Dental Trade Association, and makes the fourth to be completed. Three programs, covering dental hypodermic needles, dental brush wheels, and packaging of dental plaster and investment, have already been issued in printed form. Others are in the process of development at this time.

CONSUMERS' SPECIFICATIONS FOR TEXTILES

Service and Durability of a Fabric Essential to Purchaser

By WARREN E. EMLEY, *National Bureau of Standards*

Every man, woman, and child in the United States is a user of textiles.

Most of us are also purchasers of clothing, household linens, carpets, draperies, upholstery, rope, tents, awnings, belts, or other of the many items included under this general heading. As purchasers and consumers, we have two inalienable rights—we have the right to demand that the material shall be suitable for the purpose intended when purchased, and that it shall retain that suitability to a reasonable degree during a reasonable period of use. We buy a service, not a fabric.

Many of the properties required in a fabric when new are hard to describe. In dress goods we demand the proper draping quality, sheerness, or nonwrinkleability; in carpets, a pleasing appearance and softness of texture; in household linens, a certain degree of whiteness and luster.

The desired durability is still more difficult to specify because it is so closely associated with conditions of service which can not be standardized. A blanket should not shrink excessively when laundered, but the amount of shrinkage is as much dependent upon the way in which the laundering is done as it is upon the quality of the blanket.

Because of the difficulty of giving exact expression to the properties desired in a textile, and the still greater difficulty of estimating its probable durability, consumers have naturally fallen back upon their own experience. Experience has taught us that a certain kind of fabric will give satisfactory service when put to a certain use. We, therefore, examine this fabric carefully to ascertain just what it is made of and how it is made. This information is embodied in a specification which is used for repeat orders. Some of the larger purchasers, like the Government and numerous retailers, prepare these specifications as formal documents; in the vast majority of individual cases, the information is handed down by word of mouth from mother to daughter.

There are so many faults inherent in this method of procedure that it should be abandoned as soon as a more logical method can be found to replace it. It

effectually stops all attempts which the manufacturers might make to improve his product, and will not permit the application of the new knowledge which is being constantly produced by modern research. If the delivered fabric does not quite meet the specification, the consumer knows only that it is different from the one which he has ordered; he can not know whether it is better or worse for his purpose. If it meets the specification, he must accept it, and then if the fabric does not suit his purpose so well or so cheaply as some other fabric which could be used, the consumer has only himself to blame.

A more logical method of preparing a specification for a textile would be to study the use to which the material is to be put, and base the requirements upon the information thus obtained.

Suppose we take an evening gown, for example, a certain minimum strength is required, so that it will not tear too easily or rip out at the seams. A minimum elastic limit is also necessary, so that it will not sag and lose its shape. A requirement covering color and luster must be included, for appearance is very important. The color must be fast to perspiration, but need not be fast to light. The gown must "hang" right so a requirement for draping quality must be included. The gown must be able to withstand either dry cleaning or laundering without injury, the manufacturer to state which process is to be used, and what peculiar precautions are to be taken, if any.

Most of the test methods required for such a series of specifications are now available; others are being developed by research workers in many laboratories. The greatest need at present is a careful study by consumers of the uses to which they put fabrics and the requirements which should be included in the specifications.

It is particularly to be noted that this type of specification includes no statement as to the material of which the fabric is made nor of the way in which it is constructed. The manufacturer is given an entirely free hand to make it of anything and in any way that he can, provided only that the fabric is suitable for the purpose intended and is reasonably durable. This is all that most consumers desire.

PENNSYLVANIA TO PROMOTE CAMPAIGN FOR ELIMINATION OF WASTE

A state-wide simplification and elimination of waste program among Pennsylvania producers, distributors, and consumers is to be sponsored and conducted by the Pennsylvania State Chamber of Commerce, with the active assistance of the division of simplified practice of the National Bureau of Standards.

Pennsylvania industries have been in the forefront in promoting simplification and elimination of waste programs. For instance, more than 100 of their organizations have adopted the simplified invoice

form which has been nationally recognized as a time and money saver. This action on the part of the State chamber of commerce will add considerable impetus to these efforts.

The general secretary of the Pennsylvania State Chamber of Commerce states that the major objectives of his organization, in sponsoring this campaign, are to coordinate the present waste-eliminating activities among producers, distributors, and consumers in Pennsylvania, extend the present scope and application of simplification, and effect savings for all interests in the State through cooperative action. The plans now being formulated will probably be put into operation about the middle of September.

RAYON SPECIFICATIONS

Tested Specifications for Rayon Yarn Based Upon Requirements of Consumers

By JOHN A. SPOONER, *Merchandising Director, Viscose Co.*

If we manufactured rayon yarn into merchandise ready for retail distribution doubtless the title of my statement would be "tested merchandise" instead of "tested specifications," because it is our desire to sell the highest quality of rayon yarn produced, and we would be satisfied to have our merchandise tested. As it is we manufacture only rayon yarn, therefore, our cooperation with the retail merchant must be limited to providing the manufacturer-consumer of rayon with specifications for making the kind of rayon goods we know the retailer wants to buy as the purchasing agent for his community of consumers.

Though it is customary for the retailer to look upon labels in merchandise as simply trade-marks advertising the manufacturer, a label means a great deal more to the buyer when it identifies garments made to tested specifications of cloth and size. The quality-control plan of labeling only merchandise made to consumer specifications has not only established a sound reason for labels in merchandise, but it has sent forth a challenge to retailers against their policy of considering labels so lightly as to practically object to manufacturers placing them in merchandise.

The quality-control insignia on a label is not a manufacturer's advertisement to the retailer and consumer. It is an identifying mark that stamps the merchandise as being of high rayon quality in the meaning of the ultimate consumer, made of serviceable cloth, cut to correct size, which insures comfortable fit of the garment and durable wear proportionate to the care exercised in laundering it.

The efforts of retail buyers who were working individually and collectively through the National Retail Dry Goods Association to establish methods for determining the consumer serviceability of rayon merchandise is recognized as a step in scientific retail buying. The retailers' experience with so-called run-of-market rayon merchandise having proved expensive through customer complaints, it became desirable to cooperate with merchants in all fields of retailing to devise means for relieving the retailer of a good proportion of his customer returns and complaints by adopting a plan of identifying serviceable rayon goods.

The first task undertaken preparatory to adopting the quality-control plan was to determine by scientific tests what cloth specifications were required to make a fabric that would give serviceable wear to the ultimate consumer in customary use and establish size specifications for manufacturing the garment to insure its proper fit of normal figures based on body measurements adopted by the Government.

The quality-control plan specifications, therefore, are based upon consumer requirements without regard for costs of cloth or manufacturers' practices except to provide that minimum quality of the cloth and the workmanship must be high enough to give expected service of the garment in consumer use. The Better Fabrics Testing Bureau, official laboratory of the National Retail Dry Goods Association (see *Commercial Standards Monthly* for June, 1931), was delegated to establish the specifications of consumer serviceability because it is operated by retail merchants and has national recognition in its contacts with the National Bureau of Standards, the National Association of Dyers and Cleaners, the Laundryowners' National Association, and a background of testing experience in the analysis of returned merchandise through daily service to adjustment bureaus of the largest retail stores throughout the country.

Every step in the manufacture of rayon merchandise designed to bear the quality-control label is based on consumer-tested specifications and, as a protection to the retail merchant, the Better Fabrics Testing Bureau maintains a department in which two analysts and one chemist devote their entire time to check tests of merchandise sold by licensed manufacturers under the quality-control plan. The label identifies good rayon merchandise and, in addition, insures "tested quality" to the retail buyer and, in turn, to the ultimate consumer. The Better Fabrics Testing Bureau is authorized to cooperate with retail buyers in the preparation of buying specifications based on both the fabric specifications and size standards of the quality-control plan without charge to the retailer.

A. P. I. STANDARDS EFFECTIVE IN GERMANY AND ENGLAND

Under date of June 9, 1931, the Physikalisch-Technische Reichsanstalt, Berlin, Germany, was advised by the secretary of the division of production, American Petroleum Institute, that the Reichsanstalt had been granted authority to test and certify screw thread gages made in conformity with A. P. I. standard specifications 5A, covering casing, drill pipe, and tubing; and 5L, covering line pipe.

Similar authority having been previously granted the National Physical Laboratory, Teddington, England, it is now possible for English, German, and other

European manufacturers and users of A. P. I. standard pipe to have their gages tested and certified in Germany and England without the expense and delay incident to sending them to the National Bureau of Standards, official custodian of the institute's master gages.

Copies of all certificates and reports on A. P. I. gages issued by the Reichsanstalt and by the National Physical Laboratory, are sent to the institute and to the National Bureau of Standards, and the bureau keeps in close touch with the other national laboratories at all times as to equipment and methods of measurement employed, to the end that international uniformity of standards may prevail.

UNIFORMITY OF VEHICLE TRAFFIC RULES SOUGHT

Standardized Brake and Headlight Tests Aid Motorist to Keep His Car Mechanically Safe

By ERNEST N. SMITH, *Executive Vice President American Automobile Association*

Adoption of an effective and harmonious system of traffic rules, as well as an orderly procedure for promoting safety, offers the only hope for the efficient and safe movement of the 35,000,000 motor vehicles that will be on the streets and highways by 1940.

The greatest problem will be, as it has been in the past, within the limits of cities and towns where the principal streets were laid out prior to the advent of the automotive area. In the past, as facilities for expediting traffic were provided and safety plans were perfected, they proved obsolete when considered from the standpoint of the yearly increase in the number of automobiles. As a result it has become apparent that all efforts to set up standards for the desired smoothness in the flow of traffic, with safety to those at the wheel and pedestrians alike, must be considered in the light of future needs. The so-called saturation point with regard to the number of motor vehicles in use, often predicted, is not yet in sight.

Scientific research, however, has made it possible to consider present-day traffic and anticipate the future volume on the basis of experience. Therefore, much progress has been made and much more will be made. But the progressive nature of the problem necessarily makes it a continuing one requiring constant study and research.

The goal sought is a system which will facilitate understanding by the highway user of the requirements of any State or locality in which he may find himself. This objective, in terms of industry, is standardization. In the field of traffic, it is customary to use the term uniformity.

AAA urges uniform laws.

The American Automobile Association, since its organization in 1902, has always been to the forefront in sponsoring uniformity and encouraging a coordinated program for all agencies interested in facilitating the use of the automobile with safety. It has sponsored uniformity in rules of the road, in the meaning of warning and direction signs, as well as traffic signals. It has sponsored uniformity in rules and regulations governing the operation of motor vehicles on the streets and highways. It has sponsored uniformity in the methods used to promote safety. Through its National Committee on Highway Widening and Planning, the AAA has also sought to develop a uniform program for the use of political subdivisions and municipalities in "building safety into the highways" through the elimination of "bottle necks" and other points of congestion, as well as in planning arteries of travel to assure maximum use.

Noteworthy progress has been made in all of these fields. The achievements in securing uniformity in marking the highways have been particularly impressive. The car owner now finds standard warning and direction signs on virtually all of the interstate highways, and State agencies are rapidly placing them on secondary roads. But there are fields of even greater importance.

When the number of automobiles in use passed the 15,000,000 mark six years ago the American Automobile Association reaffirmed its belief that the multiplicity of diverse State and local laws governing car operation threatened to strangle motor transportation. The support of President Hoover, then Secretary of Commerce, was enlisted and plans formulated for a national conference on street and highway safety.

Out of this and subsequent conferences there was developed the Uniform Vehicle Code and the Model Municipal Traffic Ordinance. The unqualified support of the more than 1,000 affiliated AAA motor clubs was thrown behind this program of model legislation and it has contributed in no small way to the revision of motor laws throughout the country. Without this effort, traffic conditions to-day would be much worse. Aside from lending its prestige and support to unified national efforts to improve conditions, the AAA has met with signal success in its individual activities.

Through a national committee of 17 it promulgated the safety responsibility law in 1928 and offered it as an effective weapon to curb the reckless driver. Although this suggested legislation, designed to encourage uniform laws affecting the drivers of automobiles, has been before the country less than three years, more than a third of the motor vehicle owners in the United States and half of those in Canada are operating under one or more of the essential principles. Its appeal comes through the equitable idea of curbing the reckless without penalizing the great majority of careful drivers.

Uniformity has also been extended to the great humanitarian work of educating children to protect themselves and in assuring their safe passage across the lanes of traffic en route to and from the schoolroom. This program includes the distribution of safety lessons and posters to more than 3,000,000 school children. It also includes the activity of 175,000 schoolboy patrolmen in 500 cities who daily guide 2,500,000 children through the maze of vehicular traffic. The result has been a steady decline in fatalities and accidents among children of school age.

Space does not admit a lengthy review of every phase of uniformity as it has been applied by organized motordom, so, in conclusion, let me turn to the phases of AAA activity where the industrial term standardization may be well used. In this classification comes the standardized brake and headlight tests engaged in over the country to aid the motorist to keep his car mechanically safe.

In it falls the standardization of 5,000,000 maps and tour publications issued annually. In it falls the national reciprocal service at the touring counter where the motorist in the far West receives the identical service offered in the more populous East. But it is sufficient to say that the standards sponsored by the national organization for its member clubs have improved the general conditions under which the owners and operators of 26,000,000 motor vehicles now enjoy the new freedom that the automobile has offered.

STANDARDIZING RAILWAY SPECIFICATIONS

An Effort to Nationalize the Specification of Bridges Is in Progress

By W. C. CUSHING, *Engineer of Standards, the Pennsylvania Railroad*

To the railways standardization means the economical purchase and use of materials, tools, appliances, and supplies. To the industrial manufacturing establishments, it has the signification of mass production. The entire train of operations is mechanized and standardized, and elimination of waste the effort of constant watchfulness. In both services it is unified practice.

In the resulting efforts of studious technical associations, lacking organization authority, it becomes recommended practice. In the semiaccomplishment of reduction in variety and numbers for selection, it becomes simplified practice. "It is a widely known fact that the average consumer's knowledge of market values is so hopelessly inadequate that a persistent sales campaign can make him believe almost anything. The greater the multiplication of varieties, sizes, and terms the worse his confusion becomes."¹

Standard practice is expressed by (1) specifications, (2) plans in more or less complete detail, (3) a code of instructions or rules (Railways' Book of Rules), and (4) a selected list of suitable materials or articles, similar and equalized.

Specifications are a description of the article, appliance, device, or material desired, together with methods of examination and proof testing for ascertaining their compliance with the requirements. They are prepared in such form that they can be used in the regular routine of office work and avoid the necessity for dealing with each new request as though it were a new subject, thus clogging the working machinery and limiting the effectiveness and range of accomplishments of the daily task. When rightly prepared they save time and dispose of a problem so that it will be dealt with without delay in a routine way through systematic prescription covering all the steps to be taken.

Specifications should be prepared so that (1) they will inform the purchasing agent of the kind and quality of the article required; (2) they will instruct the manufacturer upon the terms and conditions in precise statement of desired attainments, which will be proof tested in the manner prescribed for checking the fulfilment; (3) they will inform the inspector of the purchaser of the conditions of purchase, manufacture, examination, and proof testing so that he will be the final authority for acceptance for the purchaser; (4) they will keep at hand conveniently for the ready reference of the engineers charged with the preparation of specifications, and of those who use the articles, appliances, devices, or materials, a statement of the details of preparation in each case. Convenient

information of this kind saves time in searching elsewhere, when the multiplicity of articles required for construction and maintenance are borne in mind. To many of them they are desirably instructive.

It would be impossible for a busy officer offhand to state clearly and precisely the description necessary for the purchase of the hundreds of things required daily. When the description of the article to be purchased involves the general physics, that is the science of forces or forms of energy of inorganic nature, the research laboratory becomes the valuable instrument for the study of the mechanics of materials and of applied chemistry in the arts and manufactures. These research and proof-testing laboratories have become the fundamental basis for maintaining the integrity of materials, tools, and machinery upon which the safety of the vast transportation business depends.

Approachment in perfection of specification writing leads to a wider field of usefulness, and the resultant acceptance as a national standard. For this accomplishment, the cooperative assistance of the manufacturers is desirable and necessary. The active agencies for bringing about this result are in many cases the engineering societies and the associations of manufacturers. In this way the specifications for crossties have been made a national standard, and in like manner, it is expected that the principal features of track bolts will become a national standard. Much work of this kind is in progress, notably the effort to nationalize the specifications for bridges.

Standardization by the railways began probably by the elimination of odd gages for tracks. Then followed the necessary unification of interchange dimensions for rolling stock, September 19, 1866.² Then occurred in 1875 the general time convention, which worked out the plan for standard time in the United States in 1883, without which it would be difficult to adhere to the transportation regularity of the present time.

The name of this group of railway organizations changed to American Railway Association in 1891,³ since which time it has been enlarged by the incorporation of technical railway associations, and is the influential central agency of the railways for mutual standardization.

Specifications are thus a standardized description of the article to be purchased, but the utmost vigilance must be at hand for the revision made necessary by the increased severity of the use.

Frozen standardization is an enemy to be avoided.

Mobile standardization is the friend and assistant of well organized business, the fundamental unit of which is the transportation industry.

¹ Industrial Standardization, published by National Industrial Conference Board (Inc.), New York, 1929.

² The Railway Age, p. 1423; June 22, 1929.

³ Proceedings, American Railway Engineering Association, vol. 30, p. 78; 1929.

APPROACHING AN IDEAL SPECIFICATION

Commodity Acceptance Testing Should Comply with Specification Requirements

By B. SIEGEL, *National Bureau of Standards*

Purchasing on specifications is becoming more popular and recognized in commercial life. The Federal Government, States, cities, counties, industry, commerce, and individuals are now purchasing on specifications or are becoming specification minded.

Frequently when specification is mentioned to the layman, the first thing that comes to his mind is that it is a scientific or technical description, too complicated to be understood by the ordinary individual. While this may be true to some extent, such is not always the case. As a matter of fact, the simpler the description, and the simpler the performance test requirements, provided they are adequate, the nearer the approach to an ideal specification. Few of us realize that specifications are used by people every day. A person who goes in a store to buy the very necessities of life—that is, food and clothing—gives a specification of what is wanted and the price he expects to pay. When the housewife attempts to buy a particular piece of meat, she usually specifies such requirements as 1 pound of fresh and tender sirloin steak, not too fat. The butcher knows what is wanted in language simply stated and understood by both the purchaser and the seller. There are, of course, some requirements which can not be readily checked, as in this instance, "tender." Most butchers, and some of us, can identify a tender steak by intimate inspection, but so far as known, there is no standard by which everyone can be governed with regard to this particular requirement, although some thought has probably been given toward this end. It is well known that two totally different parts of the same animal may be different as to its physical strength or toughness. Such differences, due to the nature of the material, add to the difficulties in preparing specifications, in that they frequently entail much research, testing, and actual experience.

Efforts are being made to bring the test requirements more nearly in conformity with actual performance requirements. In the case of automobile tires, accelerated performance tests have been devised. Accelerated tests have also been developed for a number of other commodities purchased under specifications. The automobile industry has developed accelerated tests for fan belts. Under previous conditions of use, it was frequently found that the belt soon failed. Research and tests resulted in the development of belts having tremendously increased useful life and performance. In a comparatively few hours accelerated service tests give information that would take many months to obtain in actual performance. Such tests can not always be developed nor are they always satisfactory in all respects. However, they serve a very useful purpose and they form the basis for further improvement.

For a commodity such as window shades, there have been developed certain accelerated laboratory tests

which are not complete tests. In addition, actual performance tests are conducted over a period of months to cover such details as washability, fading, cracking, etc., until some more satisfactory accelerated tests are developed.

Unless a commodity is purchased in sufficient quantity to justify the cost of test, it is frequently found more economical either to eliminate the test and accept the manufacturer's certificate that the material meets the requirements of the specification or to purchase in the open market without regard to specification requirements.

The purchasing officer who keeps informed as to the cost of various tests involved in specifications undoubtedly keeps the total cost of his purchases at a minimum.

The cost of testing purchases for compliance with specifications might bring the total cost of commodities high above the original cost or the cost of a satisfactory commercial article.

In developing specifications for test requirements, attempt should be made to avoid elaborate and costly tests. If elaborate tests are found necessary, some simpler tests that can be performed by the purchasing officer in emergencies, or for small-quantity purchases, should also be developed and included.

Tests which can be performed by the purchasing officer should not be referred to the testing laboratory. This fact is sometimes overlooked when shipments are received for inspection and test.

Tests are made, notwithstanding costs, where lives are dependent upon products; such as wire cable for use in elevators or for commodities that are to be used over indefinite periods without replacement.

Purchasing officers and users are devoting more time to specification requirements, instead of leaving them up to the technical men. On the other hand, the technical men are becoming better acquainted with the actual needs rather than the theoretical needs of the purchasers and users.

Reduction or elimination of excessive costs of testing might well be given more consideration by those concerned in research, testing, and in preparing specifications. Perhaps there might be better acquaintance with the comparative cost of tests and cost of commodities. Recommendations might be made that purchases under certain definite amounts should consist of known reputable commodities or to accept the vendor's certificate that the product meets the specification requirements. In the latter case when goods prove unsatisfactory, the vendor could be penalized by future debarment, return of goods, or possibly repurchasing on his account.

Commodity acceptance testing, however, is probably the only way to insure absolute compliance with specification requirements.

TESTING THE STRENGTH OF MANILA ROPE

By H. L. WHITEMORE, *National Bureau of Standards*

The strength of textiles as determined by tensile tests varies with the rate of applying the load. The strength of fiber rope also may depend upon the rate of loading, but no information was found in the technical literature as to the most satisfactory rate of loading. Fairness in acceptance tests requires that the best rate of loading be ascertained by experiment and specified so as to insure a true measure of rope strength.

Eighteen test specimens were numbered consecutively as they were cut from a coil of manila rope, having a nominal diameter of 1 inch, and were grouped for testing. Each specimen was provided with eye splices, the free length between splices being 5 feet. The specimens were held under laboratory conditions for several days before testing. The temperature and the relative humidity of the air in the laboratory were recorded when each specimen was tested.

The rope complied with the requirements of Federal specification No. 61b for manila rope. Under this specification the standard speed of the head of the testing machine is 3 inches per minute with a plus or minus tolerance of 1 inch.

The specimens were tested in a vertical-screw, lever-type testing machine. The speeds of the moving head of the machine were 0.046, 0.46, 0.94, 2.03, 3.23, and 4.16 inches per minute. Three specimens were tested at each speed. All of the specimens broke at the inner end of one of the eye splices.

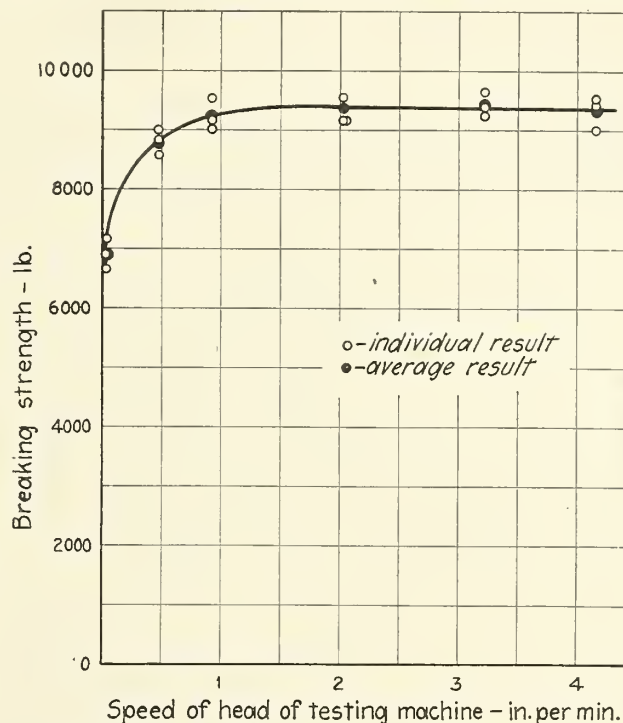
The temperature ranged from 67.8° to 76° F. and the relative humidity from 56 to 73 without appreciable effect upon the observed strength of the rope.

The results of the tests are shown graphically in the illustration.

The average breaking strength of the 12 specimens, tested at speeds from 0.94 to 4.16 inches per minute, is 9,310 pounds. The average departure of a single determination from this average is 2.1 per cent and the maximum departure is 3.3 per cent.

It is evident that between 1 and 4 inches per minute the speed of the moving head had little effect on the observed strength of the rope.

The results of tensile tests of manila rope, nominal diameter 1 inch, showed that the observed breaking



Relation between the observed strength of manila rope and different speeds of the moving head of the testing machine

strength was practically constant for speeds of the moving head of the testing machine between 1 and 4 inches per minute.

For speeds less than 1 inch per minute the observed strength of manila rope (nominal diameter 1 inch) decreased as the speed was reduced.

KNIT RAYON UNDERWEAR

The measurements and tolerances for women's circular flat knit and men's circular ribbed and circular flat knit rayon underwear proposed by the Better Fabrics Testing Bureau and the Associated Knit Underwear Manufacturers of America were adopted by the general conference on knit underwear held at New York City on June 24.

These specifications are the result of the best efforts of the industry to find a list of measurements and tolerances which, if adhered to in the manufacture of knit rayon underwear, would produce garments that will prove satisfactory to the greatest number of users.

The immediate object of the adoption of standard measurements for knit rayon underwear is to provide a better understanding between buyer and seller as to

what constitutes proper measurements and tolerances for a given size of garment; to set up a basis upon which satisfactory full-size garments may be certified to the user; and from which the dealers or buyers may determine whether or not they are receiving skimp-cut merchandise.

Each garment to be measured is laid out without tension on a smooth flat surface so that creases and wrinkles will not affect the measurements. All measurements are taken to the nearest one-eighth inch, with a steel tape which is recommended as being more convenient and accurate than other ordinary measuring devices.

It is understood that formal adoption of these standard measurements and tolerances will not entail any material changes in present commercial practices on the part of the more reputable producers who have

been following these measurements for a number of years.

A report of the general conference, including a revised draft of the recommended commercial standard has been circulated among producers, distributors, and consumers for written acceptance.

LEAD PENCILS

In an article on lead pencils in the June number of this monthly, pages 389 and 390, the following statement occurs:

By far the best wood is the common red cedar of the eastern United States, and the wood of a closely related Mexican tree. The wood has straight, fine, and even grain, and is just brittle enough to break away easily when the pencil is sharpened. A more suitable wood could hardly be imagined, and no wholly satisfactory substitute for it has ever been found.

Since this was written it has come to our attention that increasingly larger quantities of western incense cedar are being used in the manufacture of pencils. As mentioned in the article, only 8.7 per cent of all the wood used for pencils and penholders in 1928 was eastern red cedar. The available published statistics showed that 91 per cent of the total consumption of wood was "western cedars," of which there are several species. It now appears that practically all of this 91 per cent was incense cedar. These two kinds, eastern red and western incense cedar, make up 99.7 per cent of the total consumption. The remaining 0.3 per cent, or only 125,000 feet, was red gum and birch.

Incense cedar is said to have all of the good qualities of eastern red cedar, except the characteristic odor and color, which can be supplied by suitable treatment. Incense cedar is also cheaper and more abundant than red cedar. Because of the diminishing supply of red cedar and its increasing use for closet linings, it is fortunate that the industry discovered that incense cedar is so eminently suitable for making pencils.

DIAMOND CORE DRILL FITTINGS

In a recent survey to determine the extent to which the Commercial Standard for Diamond Core Drill Fittings, CS17-30, was being followed in commercial practice, an adherence of 14.3 per cent was indicated by unweighted replies from producers.

The following reasons were given for deviation from the commercial standard requirements: (a) Inactivity among drillers due to depressed conditions resulting in use of stock on hand and little demand for new material, (b) insufficient time to change from standards widely used in anthracite coal fields, (c) tendency of purchasers to reorder old-type equipment and to keep old equipment until worn out, and (d) longer time required to change designs than anticipated.

Although certain tolerances specified in the commercial standard have been modified to improve manufacturing conditions, there has been no change in nominal dimensions or in the general plan to obtain interchangeability, and the majority believe it inadvisable to revise the standard at the present time, since the new tolerances have not been subjected to ade-

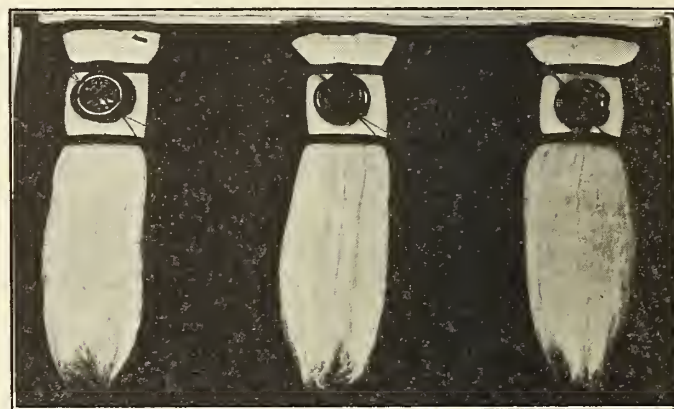
quate trial in actual practice. It seems probable that revisions will be circulated for approval in 1932.

As recommended by the standing committee, the existing standard is reaffirmed without change for another year beginning January 1, 1931.

STANDARDS FOR WOOL TOPS

Wool is among the agricultural products for which standards have been established by the United States Department of Agriculture. The significant grade factor, diameter of fiber, is made the basis for the official standards. The standards comprise 12 grades, embrace all gradations from fine to coarse, and apply to both grease and clean wool.

Representation of the official standards in physical form is made through selected specimens of wool and wool top to mark the divisional lines. For wool in the raw or grease state, sets are prepared in 12-grade and 7-grade form. In the one the complete range of the standards is provided; in the other the more prominent grades of the series are given. In this form they meet the requirements for grading wool in the fleece, for classroom instruction, and for other purposes where the complete form would prove too highly technical. The wool top sets are prepared in the 12-grade or complete form only.



Official standards of the United States for grades of wool top

The official standards of the United States for grades of wool top are based on diameter of fiber. In the practical forms of the standards the maximum diameter of the fiber for each of the grades is shown. In formulating and establishing these standards cooperation was received from the wool industry of the United States and from the Bradford Chamber of Commerce and the British Wool Federation.

As wool is a world commodity and a prominent item in this country's imports, the international aspect of the commodity and of trade practices and customs is recognized in the standards, which were developed through the aid and cooperation of the trade and industry in the United States and the leading wool associations of England.

Commercially the standards are used in the grading of wool by wool merchants and in the sorting of wool by manufacturers. For educational purposes they are used by colleges of agriculture, textile schools, and other institutions interested in the study of wool and wool grades. Their use for trade and educational purposes is optional. For Government purposes, however, the standards have official significance and are manda-

tory for grading of wool in warehouses licensed under the United States Government warehouse act. Likewise, they are used in the custom houses, being stipulated in the tariff acts as the authority for grades of wool imported into the United States.

SCHEDULE FOR GLASS CONTAINERS FOR PRESERVES, JELLIES, AND APPLE BUTTER REVISED

The proposed revision of the simplified schedule on glass containers for preserves, jellies, and apple butter (R91-29) has just been mailed by the National Bureau of Standards to all interests for their consideration and written approval.

The revision program was prompted by the action of a recent meeting of the standing committee of the industry where it was felt that a 48-ounce jar for preserves should be included in the simplified list of sizes. With this additional size in the recommendation it is expected by the committee that the program as a whole will receive more widespread and closer adherence.

Subject to the approval by the industry, the revised recommendation will become effective one month after the bureau's formal announcement that the schedule is in effect.

PLYWOOD STANDARD

On August 1 the division of trade standards announced the success of the commercial standard for plywood, as indicated by acceptances from practically all the plywood manufacturers, a large number of distributors, and many consumers.

These standard grading rules apply to plywood made from hardwood species in addition to eastern red cedar. They specify certain general requirements on workmanship, gluing, packing, etc., and the detail requirements of the face veneers required in the several grades for each species.

It is hoped that their universal acceptance and use will clarify the misconceptions as to grades often entertained by certain buyers, so that furniture manufacturers, architects, and others may definitely specify their needs.

The standard will be printed in due time as a publication of the National Bureau of Standards. Mimeographed editions of the recommended commercial standard, which is essentially the same as the printed edition, will be available while the supply lasts, from the division of trade standards, National Bureau of Standards, Washington, D. C.

POLAND STANDARDS FOR BUTTER REVISED

In its desire to raise the standard of Polish export butter and thereby to increase the volume of trade in that product, the Polish Government has recently issued a new decree ("Dz. Ust. R.P." No. 21, item 126) which partially amends the old order of November 15, 1930, in respect of the duty-free export of butter.

Regulations governing the use of exporters' marks are covered by the decree. Exporting firms register their special distinguishing marks and designs with the Ministry of Agriculture.

Minor details covered by the decree are such matters as the sealing of butter containers after inspection,

and the limitation of the validity of an export certificate to a term of 8 days after its issue, or of 14 days if the butter is placed in a cold-storage plant at one of the Polish ports. If the butter is not exported within the time-limit fixed, it must be examined anew before being exported duty-free, special attention being paid to tests covering the possible development of rot, staleness, or rancidity.

HACK-SAW BLADES

The proposed revision of the simplification for hack-saw blades, is now before the members of the industry for their consideration and written approval. This recommendation (R90-29) which was originally approved at a general conference of the industry held in April, 1928, and revised by the standing committee in May, 1929, is divided into two classes of blades, namely, standard tungsten and carbon blades and high-speed blades. In each class there are two tables of sizes. In the former there is a table listing 4 sizes of hard and flexible hand hack-saw blades and one listing 13 sizes of hard power hack-saw blades. In the latter class there are 2 sizes listed in the table of hand blades, and 12 sizes in the table of power blades.

In the proposed revision program, three sizes have been added to the high-speed power blade table by the standing committee. This action was prompted by the necessity of servicing new designs of extraheavy duty hack-saw machines. The revised recommendation will be effective one month after the issuance of the announcement by the National Bureau of Standards that the required degree of acceptance has been received.

GLASS CONTAINERS FOR MAYONNAISE, SALAD DRESSING, AND SANDWICH SPREAD

A reduction from 25 varieties of glass containers to 5, was effected by a general conference of the industry, held June 30, under the auspices of the National Bureau of Standards, in approving a proposed simplified-practice recommendation covering the capacities of glass containers for mayonnaise, salad dressing, and sandwich spread.

The five sizes recommended to the industry by the conference are the 3-fluid ounce, the one-half pint or 8-fluid ounce, the pint, the quart, and the gallon. It was pointed out at the conference that the simplified schedule will not affect the distinctive shapes of containers in use by different manufacturers.

Subject to the written approval by the industry, the recommendation will become effective for new production on January 1, 1932, and for the clearance of existing stocks on July 1, 1932.

TO LABEL "ANTIFREEZE" MIXTURES

Automobile "antifreeze" mixtures of more than 15 per cent methanol henceforth are to be identified by added quantities of purple coloring matter, tartar emetic, and chloracetophenone, or tear gas, under the provisions of an agreement, effective July 1, 1931, reached by the United States Public Health Service with industries concerned. The plain marking of this mixture is deemed necessary to prevent persons from

drinking it and from the careless and dangerous use of it.

By the agreement, moreover, all solutions of more than 15 per cent free methanol, whether used in industry or in "antifreeze" mixtures, are to be labeled plainly "Poison," and, as well, when used in "antifreeze" products, are to contain the prescribed additional amounts of identifying coloring matter and chemicals. The agreement provides also that the producers will not introduce new uses for methanol until the condition under which these uses may be developed are investigated scientifically.

MODEL TRAFFIC LAW USED BY 38 CITIES

Promotion of the "Model Municipal Traffic Ordinance" and the "Traffic Sign and Signal Code" in cities, and of the "Uniform Vehicle Code" in State legislatures of 1932 and 1933, was the chief topic of discussion at a meeting of the executive and publicity committees of the National Conference on Street and Highway Safety held in New York, June 23.

Legislative progress reported in 1931 includes seven new drivers' license laws (with four legislatures still in session at the time of committee meeting) and four new laws requiring periodic inspection of vehicles under State auspices. The opposition of a few local groups is due to lack of understanding and will eventually yield to a persistent campaign of education, it was stated at the conference.

Special attention will be given to securing adoption by cities of the Model Ordinance and the Sign and Signal Code before the next legislative sessions. The ordinance is already in force in at least 38 cities.

FEDERAL SPECIFICATIONS

Fourteen Federal specifications, ranging from cheesecloth to safes, were considered during the month of July by the Federal Specifications Board. Of this number 11 were proposed for revision and 3 were proposed for promulgation as new specifications. Copies of these specifications (in mimeographed form) and further information can be obtained from the Federal Specifications Board, National Bureau of Standards, Washington, D. C.

New designation	Specifications under revision	F. S. No.
C-F-201	Felt, hair.....	158
AA-S-81	Safes, insulated.....	60a
JJ-N-191	Netting, mosquito (unbleached bobbinet).....	540a
QQ-B-611	Brass, commercial, bars, plates, rods, shapes, sheets, and strips.....	392
QQ-C-501	Copper, bars, plates, rods, shapes, sheets, and strips.....	467
QQ-F-191	Ferrotitanium.....	144
CCC-D-731	Duck, numbered cotton.....	53
CCC-D-751	Duck, light weight, gray (Army duck).....	159
CCC-J-191	Jean, bleached.....	641
DDD-S-251	Shades, window, rollers, slats, cords and accessories.....	367b
	Cheesecloth for wiping purposes (remnants and seconds).....	251a & 344
	Rugs, American oriental (washed).....	
V-T-276	Thread, cotton.....	
	Knives, putty and scraping.....	

FOOD INDUSTRIES FAVOR STANDARDS FOR THEIR PRODUCTS

The food industries are showing a tendency to support legislation for standardization of all manufac-

tured food products and for more extensive legal control of sanitary conditions in food-manufacturing plants and establishments where foods are handled and sold, stated a recent announcement of the Federal Food and Drug Administration, United States Department of Agriculture.

With Federal standards in effect for three of the principal canned foods, and standards for three more in the course of promulgation, the department feels that substantial progress has been made in the task of placing in operation the McNary-Mapes Act providing for such standards.

The pioneer nature of the work is shown by the fact that the department had to invent a device for measuring accurately the tenderness of such products as peas, peaches, and apricots. Much time was spent in adapting existing systems of color measurements to canned tomatoes, color being important in determining the quality of this product.

POLISHED COTTON TWINE

Effecting a reduction in variety of approximately 75 per cent in twine sizes, yarn sizes, colors, put-ups, and packaging, a general conference of manufacturers, distributors, and users, held in New York on June 16, adopted a simplified-practice recommendation for polished cotton twine. The retained varieties will, in the opinion of those concerned, satisfy the requirements of the trade.

Polished cotton twine is a special kind, made from cotton fibers and processed to give a smooth finished surface. It is this finish which distinguishes it from the ordinary or unfinished cotton twine. It is used for wrapping purposes where a polished twine is preferred to an unfinished twine, and in the last few years has found an ever-increasing market. The methods employed in calculating yarn size and other characteristics follow those used for unfinished twine. The report of the conference, which has been sent to all concerned for examination and formal acceptance, contains a description of the calculations used in determining these characteristics.

INDORSEMENT OF LABELING BY CONSUMER GROUP

At its annual business meeting in Detroit, June 25, 1931, the American Home Economics Association adopted the following resolution:

The association has for some time been cooperating with manufacturers and distributors through the Departments of Commerce and Agriculture and the American Standards Association in the development of standard specifications as to the composition, construction, and performance of household goods. It is frequently true that standards now available are not used by retailers in selling over the counter because they do not realize the value of accurate information to the household buyer. The association can perform a valuable service by establishing contacts between progressive retailers and home makers desirous of increasing the efficiency of their buying. Resolved that the members of the association cooperate in every way with the retailers in their own communities to further the purchase and sale of consumers' goods labeled according to standards set up through the American Standards Association, the National Bureau of Standards of the United States Department of Commerce, or the Bureau of Agricultural Economics of the United States Department of Agriculture, or labeled in some other way with accurate measurements as to quality and performance.

STANDARDIZATION BRIEFS

Standards Commission of Sweden.—The name of the Swedish Industrial Standardization Committee was recently changed to the Standards Commission of Sweden. This change was found necessary as the Swedish Government is expanding its standardization program to include other activities besides industry.

National Industry Standards Committee in China.—A national industry standards committee was established May 2, 1931, by the National Government of the Republic of China. The membership of this committee will be selected from the different central governmental departments, the industrial organizations, factories, technical societies, and experts along special lines.

To prosecute for false labeling.—As a result of extensive surveys during the last year which show that many medicinal products are on the market bearing label claims which their compositions do not justify, a notice of warning has been sent to manufacturers of medicinal preparations by the Food and Drug Administration of the Department of Agriculture, that a vigorous program against such falsely labeled preparations will be continued by the department.

To stop false advertising of watchcases.—A watchcase company of New York City has been ordered by the Federal Trade Commission to discontinue selling watchcases which are stamped with the phrase "Rolled gold plate" or words of like import, and from using that phrase in advertising watchcases unless the cases contain not less than three one-thousandths of an inch in thickness of gold on the outside thereof, and not less than one one-thousandth of an inch in thickness of gold on the inside.

Making fireworks by specification.—Having experienced considerable difficulty with fireworks purchased in the open market, the city officials of Milwaukee, Wis., sought means to overcome this objection. In cooperation with a manufacturing concern that had specialized in the manufacture of railroad signals, built to specification, the central board of purchases of Milwaukee, developed specifications for the manufacture of their 1931 fireworks, which proved highly satisfactory. This year the city repeated its experiments of having the fireworks made to specifications.

Steel pipe nipples.—As a result of a survey among the manufacturers to determine adherence to the commercial standard for steel pipe nipples (CS5-29) a summarized report has been released by the National Bureau of Standards indicating that among the reporting manufacturers 93.7 per cent of production conformed to the requirements of the standard. In accordance with the recommendation of the standing

committee, the existing standard has been reaffirmed, without change, for another year, as of January 1, 1931.

Wrought-aluminum alloys.—A specification relating to wrought-aluminum alloys for general engineering purposes has been published by the British Engineering Standards Association. This relates to heat-treated sheets and strips and covers the material generally known as Y-alloy. The chemical composition of the alloy, the tolerances permissible on the finished sheets and strip, and the tensile strength, proof stress, and elongation are specified. Appended to the specification is a useful memorandum dealing with the preparation and heat-treatment of the alloy.

Costa Rica requires certificates on hog lard imports.—A Costa Rican executive decree, effective July 24, 1931, prohibits the importation of hog lard unless accompanied by a certificate issued by a competent sanitary authority in the country of origin showing that the animals from which the lard was obtained has received both antemortem and postmortem examination and found to be free from disease, according to a cable from American Consul J. D. Myers, San Jose. This requirement is similar to that of the meat-inspection service of the United States Department of Agriculture, whose certificates cover both ante and post mortem inspections.

Metal Mining Code Revised.—Revision of the Utah Metal mining code, scheduled to become effective August 1, 1931, was recently announced at Salt Lake City by O. F. McShane, a member of the industrial commission of Utah. The new code, he said, provides for an improved cross head on buckets used in shafts of 300 feet or deeper; the establishment of an automatic stop on hoisting engines to prevent the cage or bucket from being carried too high in the hoisting frame; prohibition of anything but electrical firing in any shooting done in a shaft, except in the case of prospect holes; and requiring a hoisting engineer to be present at all times when men, working in a mine, are using a vertical shaft.

Valve fittings for compressed gas cylinders.—British Engineering Standards Association has issued a specification for valve fittings for compressed gas cylinders. This specification provides for valve fittings for compressed gas cylinders for practically all the gases in general use, and requirements have been included for a safety release for carbon-dioxide cylinders. Particulars are given in an appendix of inspection gages for checking the threads on the valves and the threads in the cylinder necks, and the National Physical Laboratory is the custodian of the standard gages, so that the working gages necessary for the production of cylinders and valves can be checked at a reasonable cost.

Advertisement of quality in the paper-bag industry.—The paper-bag industry, represented by both members and nonmembers of the Paper Bag Manufacturers Association, has accepted eight trade practice rules formulated by the industry and revised by the Federal Trade Commission. Among the rules pertaining to practices held to be violative of law is one which defines as an unfair trade practice the making of any false or deceptive statement by way of advertisement concerning the grade, quality, quantity, substance, character, nature, origin, size, or properties of any product of the industry, having the tendency and capacity to mislead or deceive purchasers or prospective purchasers.

Telegraph code for the electrical industry.—A standard telegraph code for the electrical industry, sponsored by the National Electrical Manufacturers' Association and other electrical associations, has been compiled under expert supervision for the use of the entire electrical field not only for economy in communication, but to provide means for more frequent, accurate, and comprehensive exchange of information of immediate necessity. According to the announcement it is the first instance of an entire industry uniting on a general code, and its cheap distribution is dependent upon the response to the prepublication offer as detailed in the prospectus which is available upon application to the N.E.M.A.

Revision of food standards.—Tentative revision of the Federal definition for milk bread, restatement of the definition for rye bread, and issuance of a tentative definition for farina macaroni, farina spaghetti, and farina vermicelli, have been announced by the United States Department of Agriculture. In the case of milk bread, the proposed new definition requires that all the liquid used be milk or its equivalent, instead of the present requirement that only one-third of the liquid need be milk or its equivalent. The department has also announced new definitions and standards for whole wheat bread, raisin bread, Boston brown bread, sorghum sirup, canned tomato juice, and dextrose.

Sulphonated oils.—The cooperation of the National Bureau of Standards in the establishment of a commercial standard for sulphonated oils has been requested by one of the large users. According to present information this specification will cover nomenclature, chemical requirements, and other consumer criteria as well as methods of testing and labeling of sulphonated oils, which are used mainly in the textile field as softeners in finishing; wetting and boiling out agents; mordants in some classes of dyeing; and as a means of leveling or evening some of the basic or substantive colors on cotton.

QUALITY ADVERTISING IN THE JEWELRY INDUSTRY

One of the revised trade practice rules of the jewelry industry recently approved by the Federal Trade Commission sets forth as an unfair trade practice "the making or causing or permitting to be made

Muskrat hide dealer stops use of word "seal."—The Federal Trade Commission has obtained from a corporation distributor, an agreement stipulating that no longer will muskrat hides, skins, or pelts sold by it be so represented as to imply, or have the tendency to deceive customers into the belief that such goods are the skins, hides, or pelts of the seal. The company also agreed to stop using in its advertising the word "seal" either independently or in connection with the word "hudson" or with other words, or in any way so as to imply that the products sold are the skins, hides, or pelts of the seal when such is not true.

Grapefruit juice found misbranded.—More than 2,000 cases of canned grapefruit juice, either adulterated with undeclared sugar or sugar sirup or misbranded as to quantity of contents have been recently seized by the Food and Drug Administration of the United States Department of Agriculture. The department contends that buyers who want pure fruit juices should not be obliged to pay for those which have been sweetened or watered. To this end the department has urged the housewife, when buying fruit juices, to read the label for statements of quantity in the container and for declarations of sugar that may be added.

Barber supply house corrects labeling of its goods.—A corporation engaged in importing supplies for use in barber shops and beauty parlors and selling them at wholesale and retail, has signed a stipulation with the Federal Trade Commission agreeing to stop advertising and labeling one of its products with the words "tempered," "special steel" or "forged steel." These terms will not be used either independently or with each other, or with other similar words or phrases which would confuse buyers into believing that the product so represented is made of forged steel, or that it is tempered or specially hardened in any way, when this is not true.

Identification colors for gas cylinders.—The British Engineering Standards Association has just published a specification for identification colors for gas cylinders for gases most commonly in use. The underlying principle of the scheme is that yellow should represent toxic or poisonous gases, and red or maroon inflammable gases; for example, hydrogen and coal-gas cylinders are to be colored red; chlorine cylinders are to be colored yellow; and the color of cylinders for carbon monoxide is a yellow ground with a red band. The committee responsible for the preparation of the schedule has recognized that there are other gases used in limited quantities for which a color has not yet been allocated, and it points out that it is important that the colors so far adopted should not be used for gases other than those indicated.

or published any false, untrue, or deceptive statement by way of advertisement or otherwise concerning the grade, quality, quantity, substance, character, nature, origin, size, or preparation of any product of the industry having the tendency and capacity or mislead or deceive purchasers or prospective purchasers."

Represented at the trade practice conference of the jewelry industry which resulted in the formulation of the rule referred to were the National Wholesale Jewelers' Association, National Jewelers' Board of Trade, American National Retail Jewelers' Association, New England Manufacturing Jewelers' and Silversmiths' Association, National Jewelers' Publicity Association, Wholesale Jewelers of Chicago, Mil-

waukee District Jewelers' Club, Jewelry Trade Association, Retail Jewelry Association of Missouri, Kansas City Wholesale Jewelers' Association, Wisconsin Retail Jewelers' Association, Jewelry Crafts' Association, Jewelers' Vigilance Committee, Jewelers' 24-Carat Club, National Retail Drygoods Association, Trunk, Luggage & Leather Goods Manufacturers of America.

C

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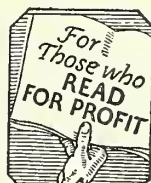
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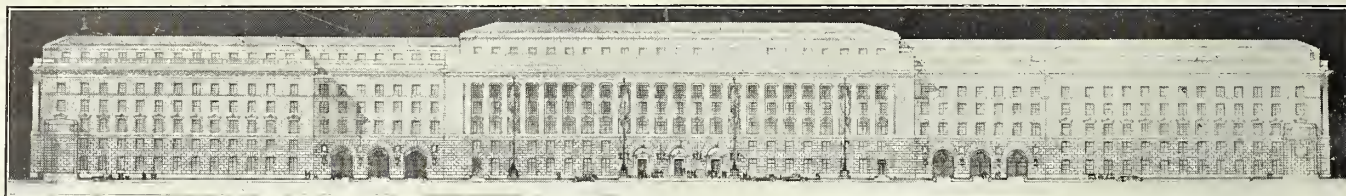
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—President Hoover, at the laying of the corner stone of the new building of the U. S. Department of Commerce, June 10, 1929.



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